



Cathedral Energy Services  
1949 Pyrite Rd.  
Casper, Wyoming  
82604

**145042**

5":100' - MD

2/13/2014 12:04:29 AM

**Oper. Company:** EnCana  
**Country:** USA  
**State / Province:** CO  
**County / Parish:** United States  
**Started:** 02/05/2014 05:00 AM

**API/UWI:** 05-123-37786-00  
**Field:** DJ Basin  
**Well:** Lochbuie 2G-31H  
**Rig:** H&P 522  
**Ended:** 02/12/2014 04:00 PM

### Personnel

**Day Hand:** Clarke Van Oerle  
**Night Hand:** Andrew Stewart  
**Comp. Emp:** Cathedral Energy Service

### Location

**Latitude:** 40.014080  
**Longitude:** -104.711990  
**Elev. GL:** 5007'  
**Elev. DF:** 30'  
**Elev. KB:** 5037'

Gamma Ray  
ROP  
TD 12,011'

### Hole Data

Size	From	To
12.25	0	1512
8.75	1512	7693
6.125	7693	12011

### Casing Data

Size	From	To
9 5/8	0	1505
7	0	7689
4 1/2	0	11999

### Bit Sizes

Size	From	To
12.25	0	1512
8.75	1512	7693
6.125	7693	12011

### Mud Data

Type	Weight	Density	Viscosity	Rm	Rmf	Rmc	From	To
Water	8.4		28				0	4000
LSND	9.9		40				4000	7500
LSND	10.4		49				7500	12011

### Tool Run Data

Serial Number	Gamma Offset	Resist. Offset	Start Time	Start Depth	End Time	End Depth
280	36.7	0	2/4/2014 3:00:51 PM	5000	2/5/2014 8:00:51 PM	6930
280	40.45	0	2/5/2014 9:00:24 PM	6930	2/6/2014 5:00:24 PM	7245
280	41.3	0	2/6/2014 9:00:21 AM	7245	2/8/2014 1:30:21 AM	7693
280	39.08	0	2/9/2014 1:30:06 PM	7693	2/12/2014 12:00:06 PM	11554
309	39.19	0	2/12/2014 1:00:20 AM	11554	2/12/2014 4:00:20 PM	12011

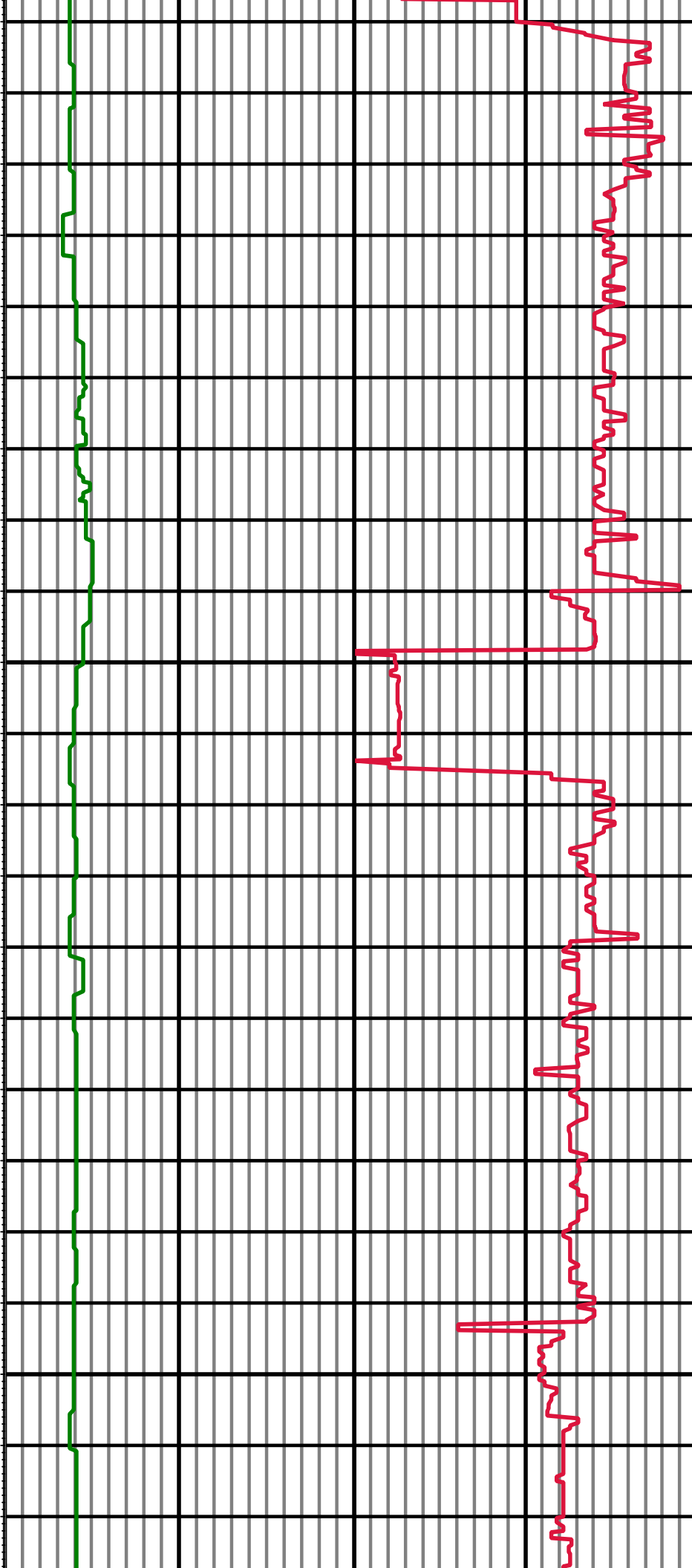
*All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not except in the case of gross or willful negligence on our part, be liable or responsible for any loss, cost damages or expenses incurred or sustained by anyone resulting from an interpretation made by any of our officers, agents, or employees.*

MD 0.00 GR 1(API) 300.00 0.00 ROP(FT/HR) 950.00 Surveys (MD/INC/AZ)

FT



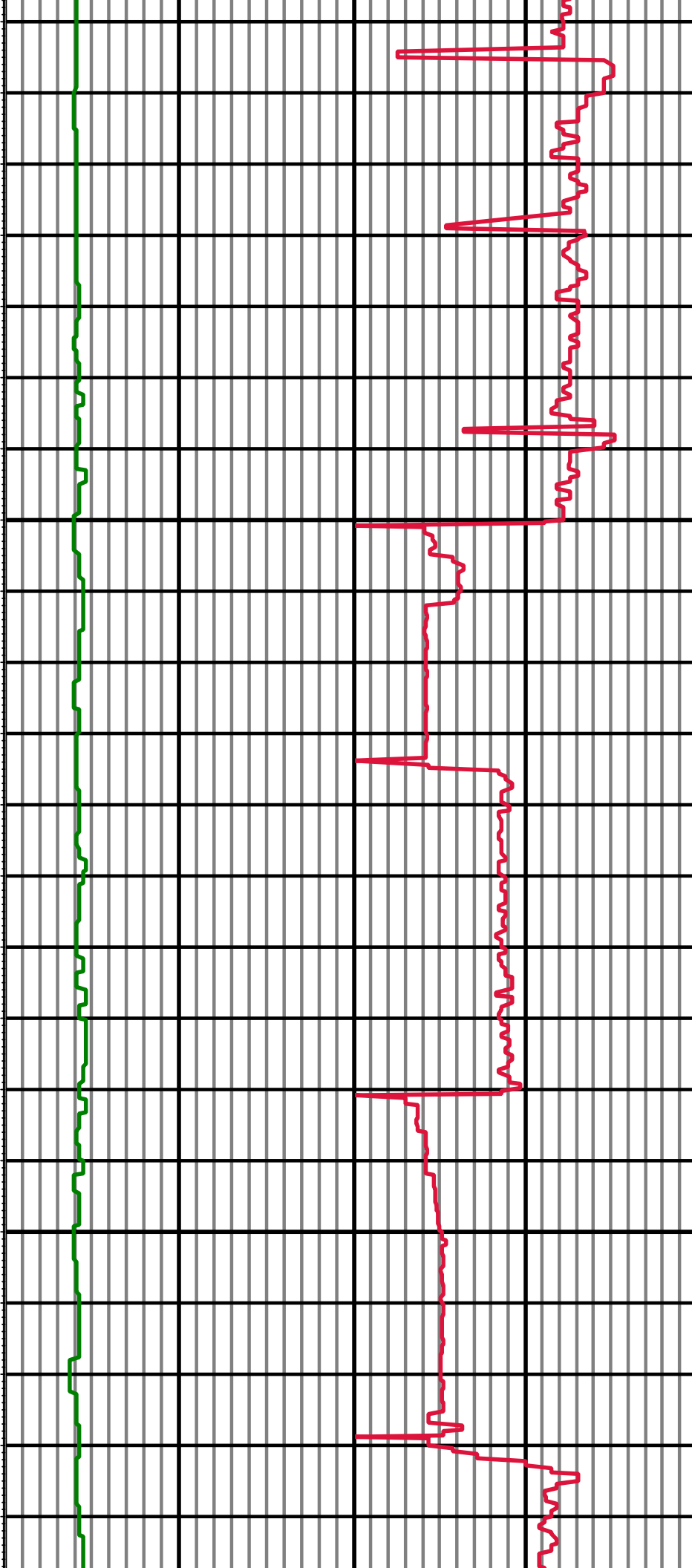
5,220 5,210 5,200 5,190 5,180 5,170 5,160 5,150 5,140 5,130 5,120 5,110 5,100 5,090 5,080 5,070 5,060 5,050 5,040 5,030 5,020 5,010



MD: 5048.00 INC: 11.60 AZ: 73.20

MD: 5142.00 INC: 11.20 AZ: 74.70

5,230 5,240 5,250 5,260 5,270 5,280 5,290 5,300 5,310 5,320 5,330 5,340 5,350 5,360 5,370 5,380 5,390 5,400 5,410 5,420 5,430 5,440

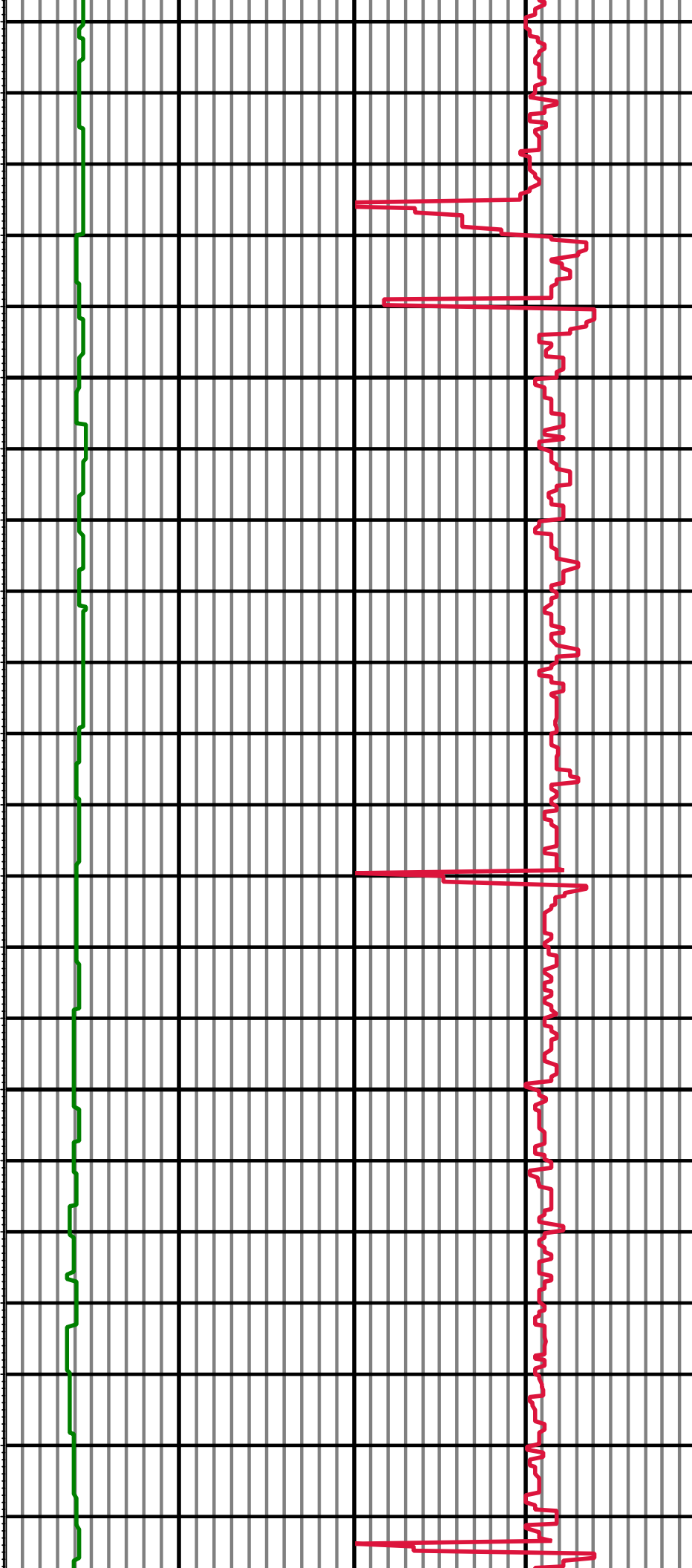


MD: 5237.00 INC: 10.50 AZ: 73.70

MD: 5331.00 INC: 9.90 AZ: 73.10

MD: 5426.00 INC: 13.60 AZ: 82.50

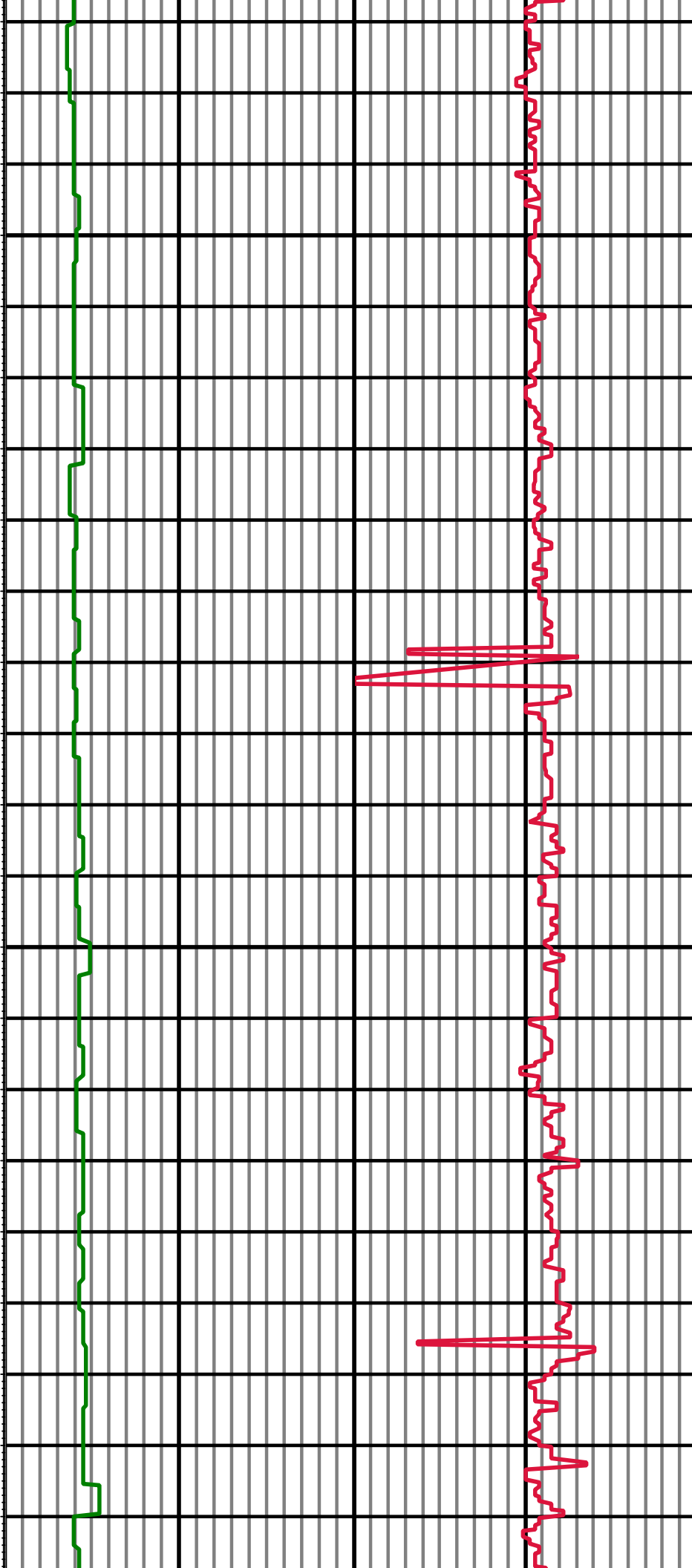
5,660 5,650 5,640 5,630 5,620 5,610 5,600 5,590 5,580 5,570 5,560 5,550 5,540 5,530 5,520 5,510 5,500 5,490 5,480 5,470 5,460 5,450



MD: 5521.00 INC: 12.30 AZ: 82.30

MD: 5615.00 INC: 11.50 AZ: 80.40

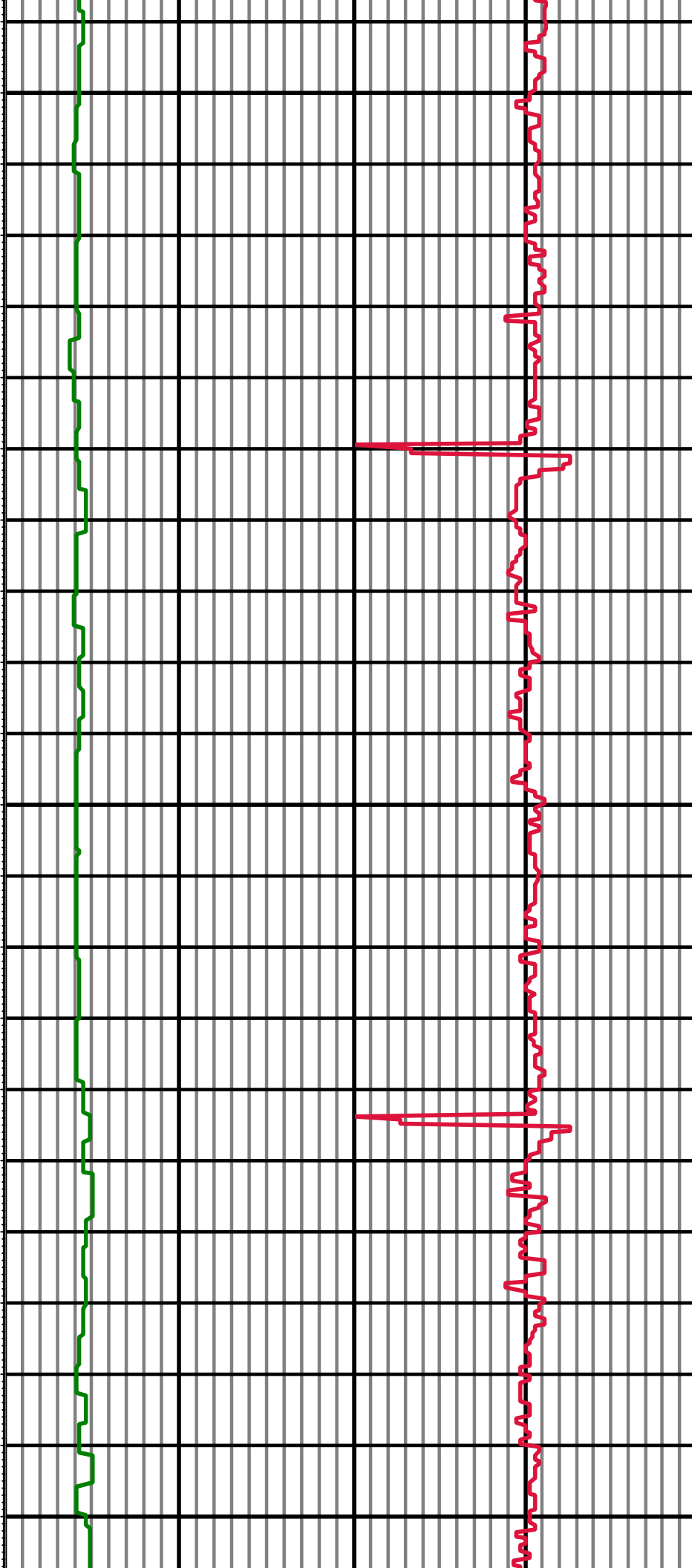
5,880 5,870 5,860 5,850 5,840 5,830 5,820 5,810 5,800 5,790 5,780 5,770 5,760 5,750 5,740 5,730 5,720 5,710 5,700 5,690 5,680 5,670



MD: 5710.00 INC: 10.60 AZ: 80.30

MD: 5804.00 INC: 9.10 AZ: 76.00

6,100 6,090 6,080 6,070 6,060 6,050 6,040 6,030 6,020 6,010 6,000 5,990 5,980 5,970 5,960 5,950 5,940 5,930 5,920 5,910 5,900 5,890

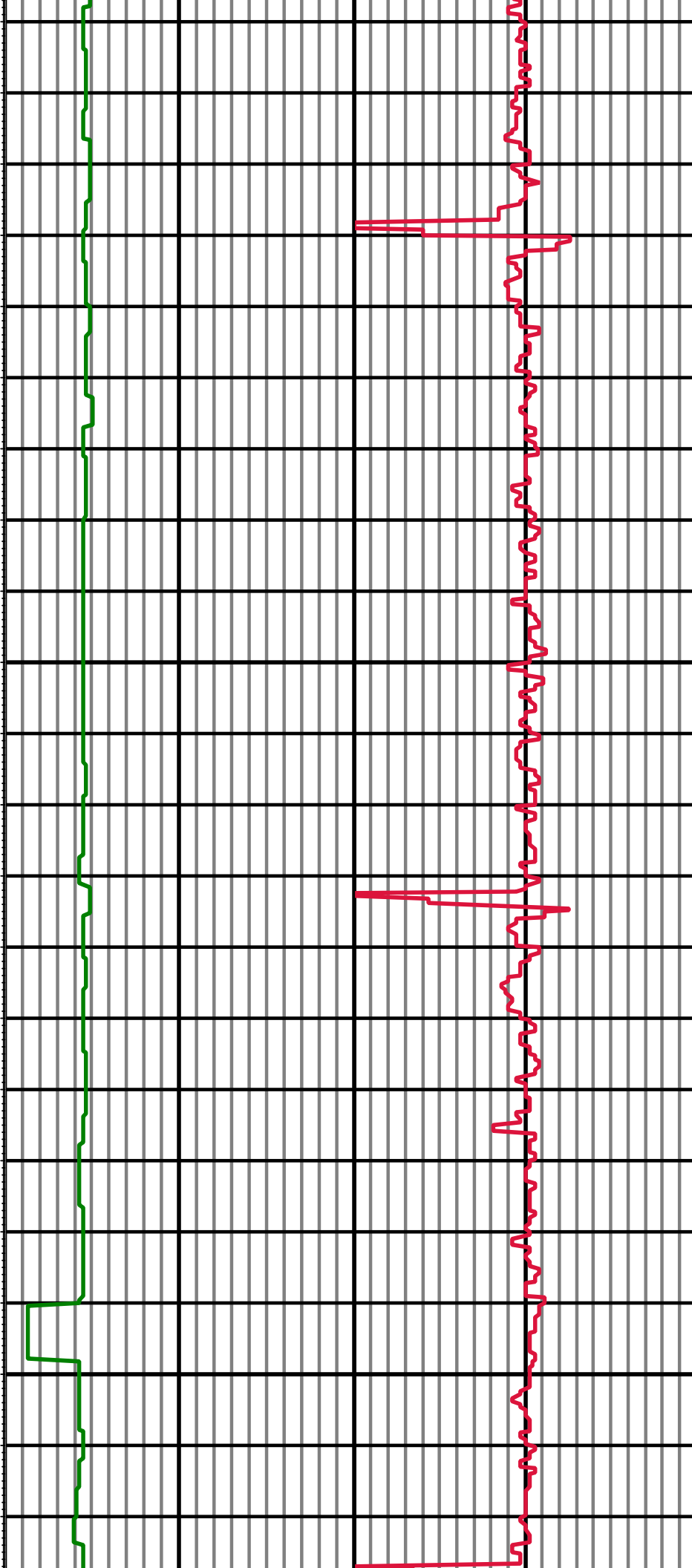


MD: 5899.00 INC: 7.60 AZ: 72.80

MD: 5993.00 INC: 6.40 AZ: 72.20

MD: 6088.00 INC: 5.30 AZ: 72.60

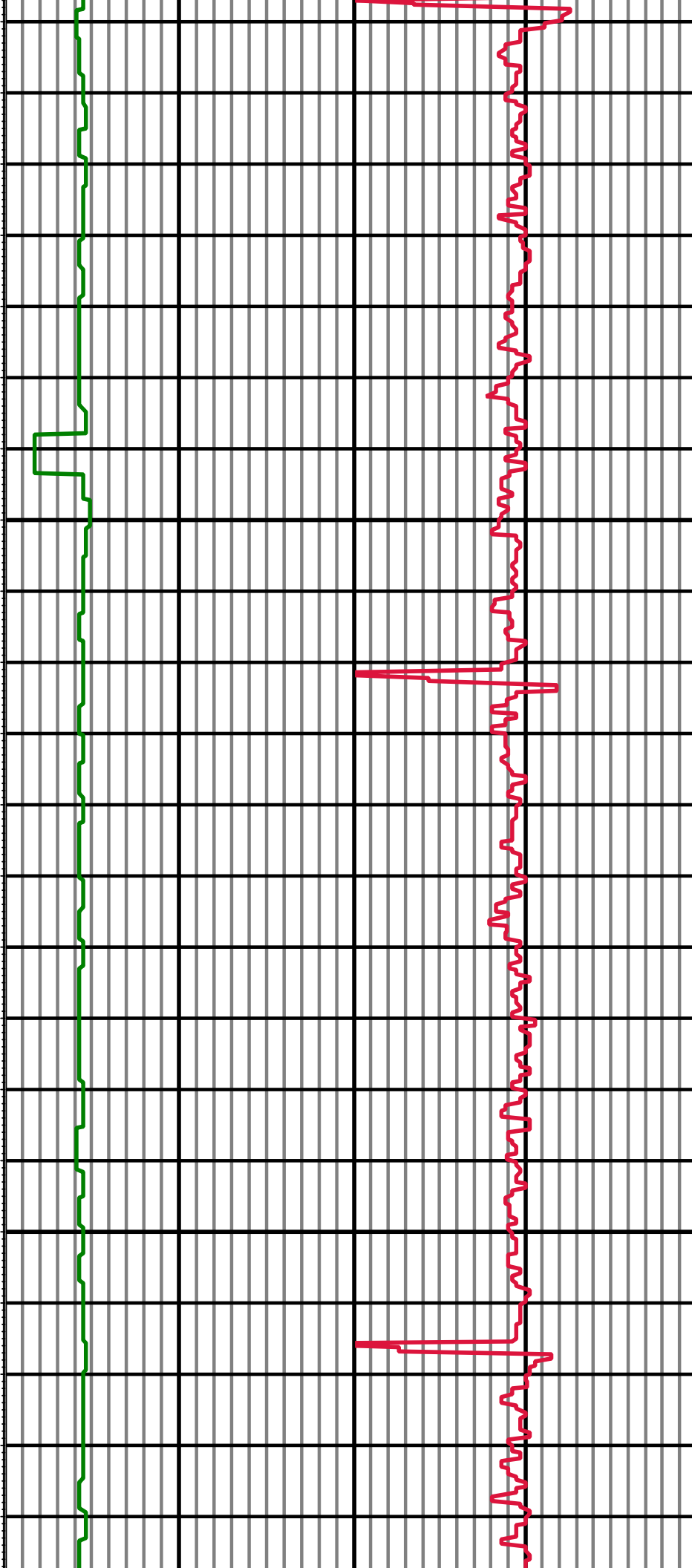
6,320 6,310 6,300 6,290 6,280 6,270 6,260 6,250 6,240 6,230 6,220 6,210 6,200 6,190 6,180 6,170 6,160 6,150 6,140 6,130 6,120 6,110



MD: 6183.00 INC: 4.60 AZ: 68.60

MD: 6277.00 INC: 4.00 AZ: 70.10

6,540 6,530 6,520 6,510 6,500 6,490 6,480 6,470 6,460 6,450 6,440 6,430 6,420 6,410 6,400 6,390 6,380 6,370 6,360 6,350 6,340 6,330

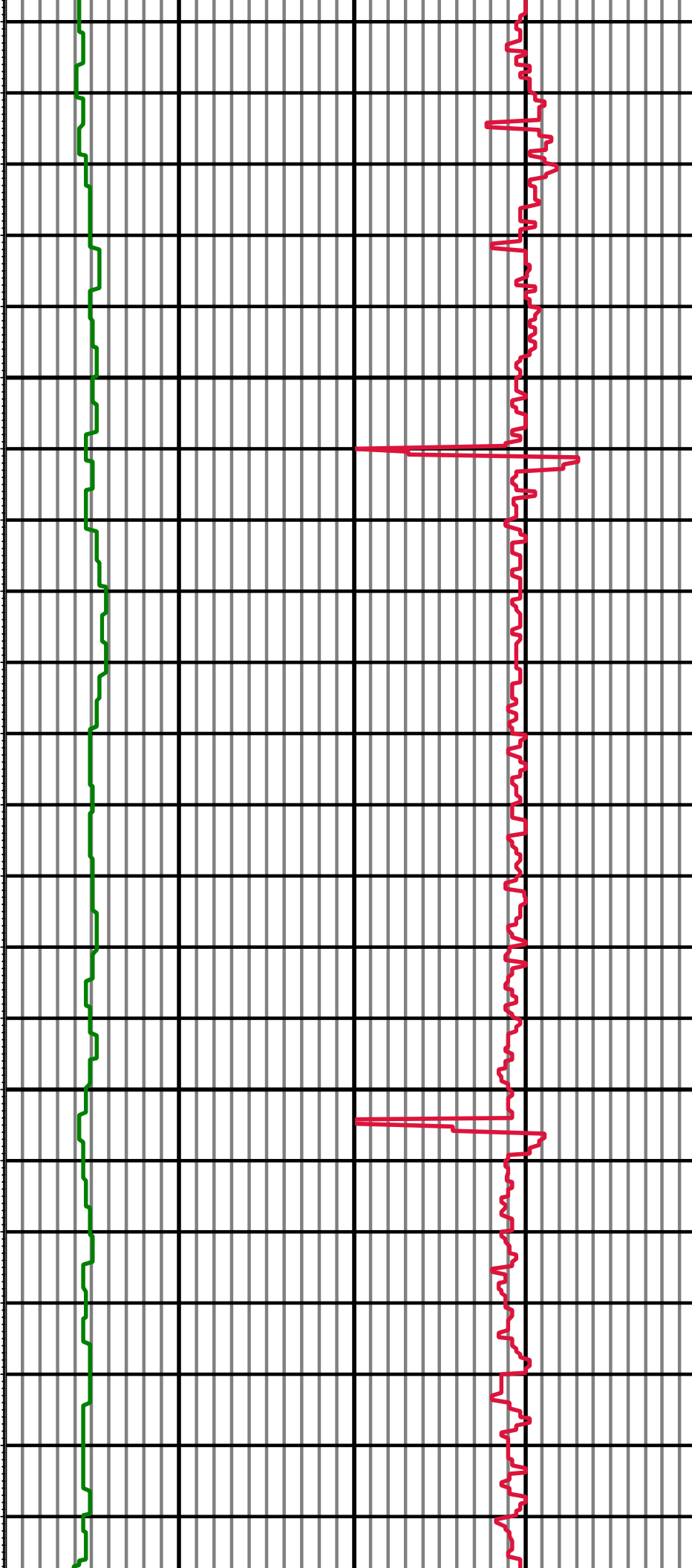


MD: 6372.00 INC: 3.90 AZ: 76.20

MD: 6466.00 INC: 3.40 AZ: 77.90



6,550 6,560 6,570 6,580 6,590 6,600 6,610 6,620 6,630 6,640 6,650 6,660 6,670 6,680 6,690 6,700 6,710 6,720 6,730 6,740 6,750 6,760

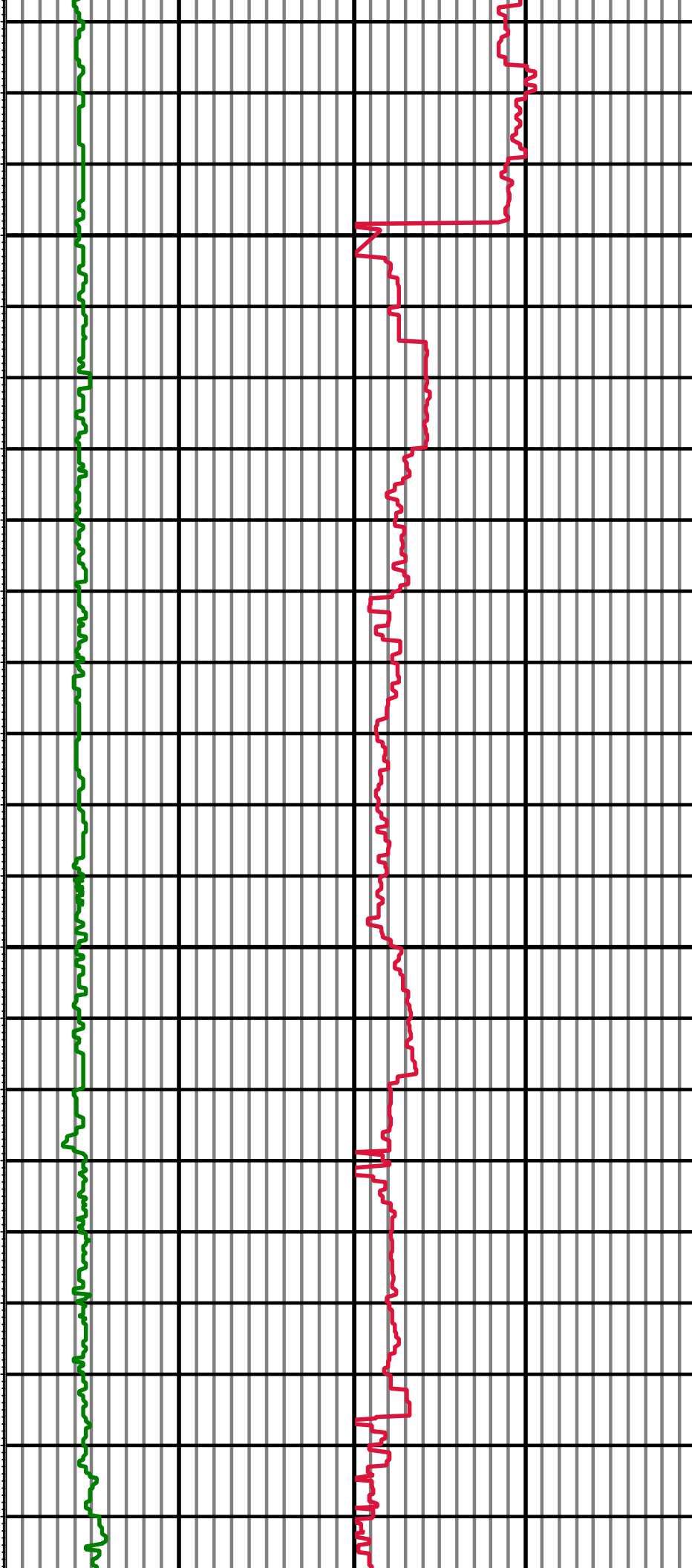


MD: 6561.00 INC: 2.90 AZ: 79.70

MD: 6656.00 INC: 2.10 AZ: 81.40

MD: 6750.00 INC: 1.10 AZ: 74.20

6,980 6,970 6,960 6,950 6,940 6,930 6,920 6,910 6,900 6,890 6,880 6,870 6,860 6,850 6,840 6,830 6,820 6,810 6,800 6,790 6,780 6,770



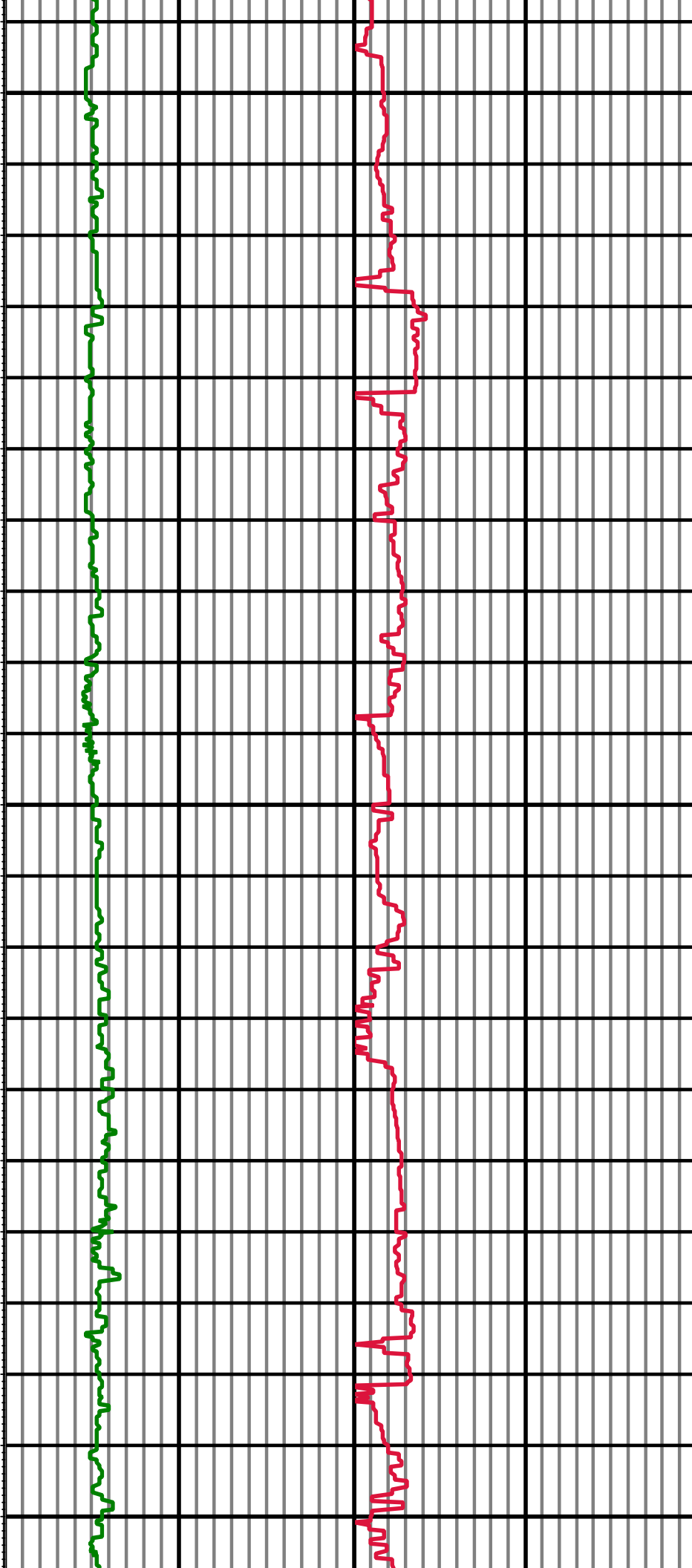
MD: 6845.00 INC: 1.00 AZ: 149.20

MD: 6876.00 INC: 1.90 AZ: 177.10

MD: 6940.00 INC: 5.10 AZ: 202.80

MD: 6987.00 INC: 9.40 AZ: 202.80

6,990  
7,000  
7,010  
7,020  
7,030  
7,040  
7,050  
7,060  
7,070  
7,080  
7,090  
7,100  
7,110  
7,120  
7,130  
7,140  
7,150  
7,160  
7,170  
7,180  
7,190  
7,200



MD: 6987.00 INC: 9.40 AZ: 202.80

MD: 7035.00 INC: 12.40 AZ: 200.00

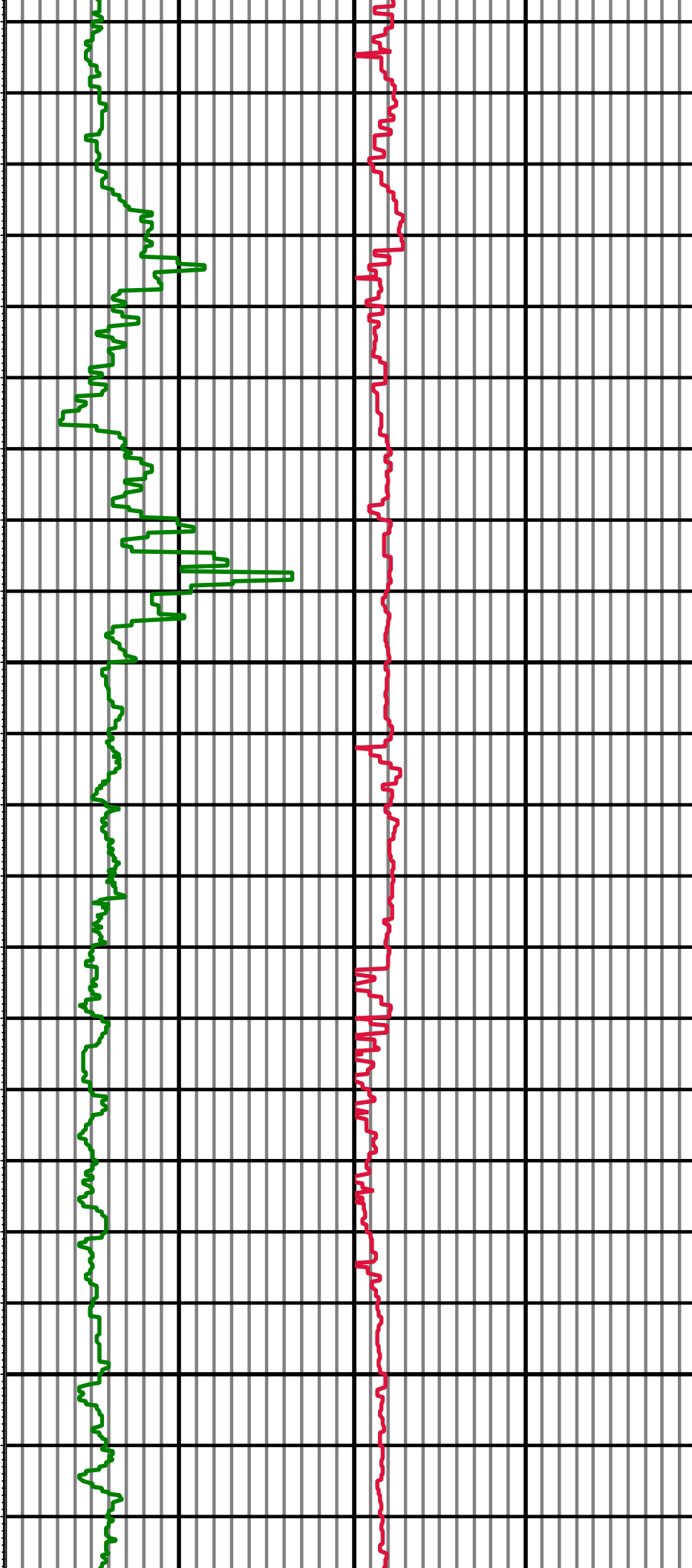
MD: 7082.00 INC: 15.90 AZ: 201.30

MD: 7129.00 INC: 19.00 AZ: 203.30

MD: 7161.00 INC: 22.00 AZ: 204.10

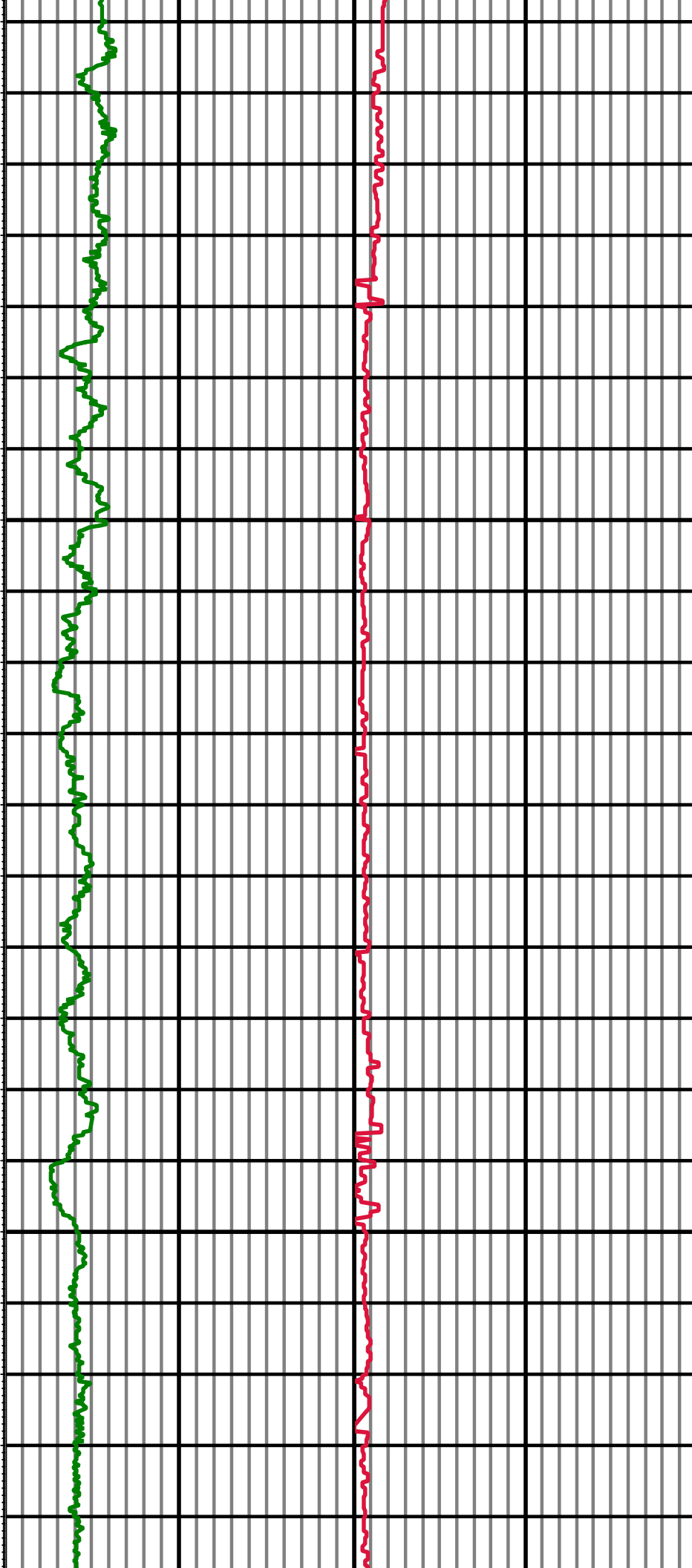
MD: 7192.00 INC: 24.40 AZ: 205.90

7,210 7,220 7,230 7,240 7,250 7,260 7,270 7,280 7,290 7,300 7,310 7,320 7,330 7,340 7,350 7,360 7,370 7,380 7,390 7,400 7,410 7,420

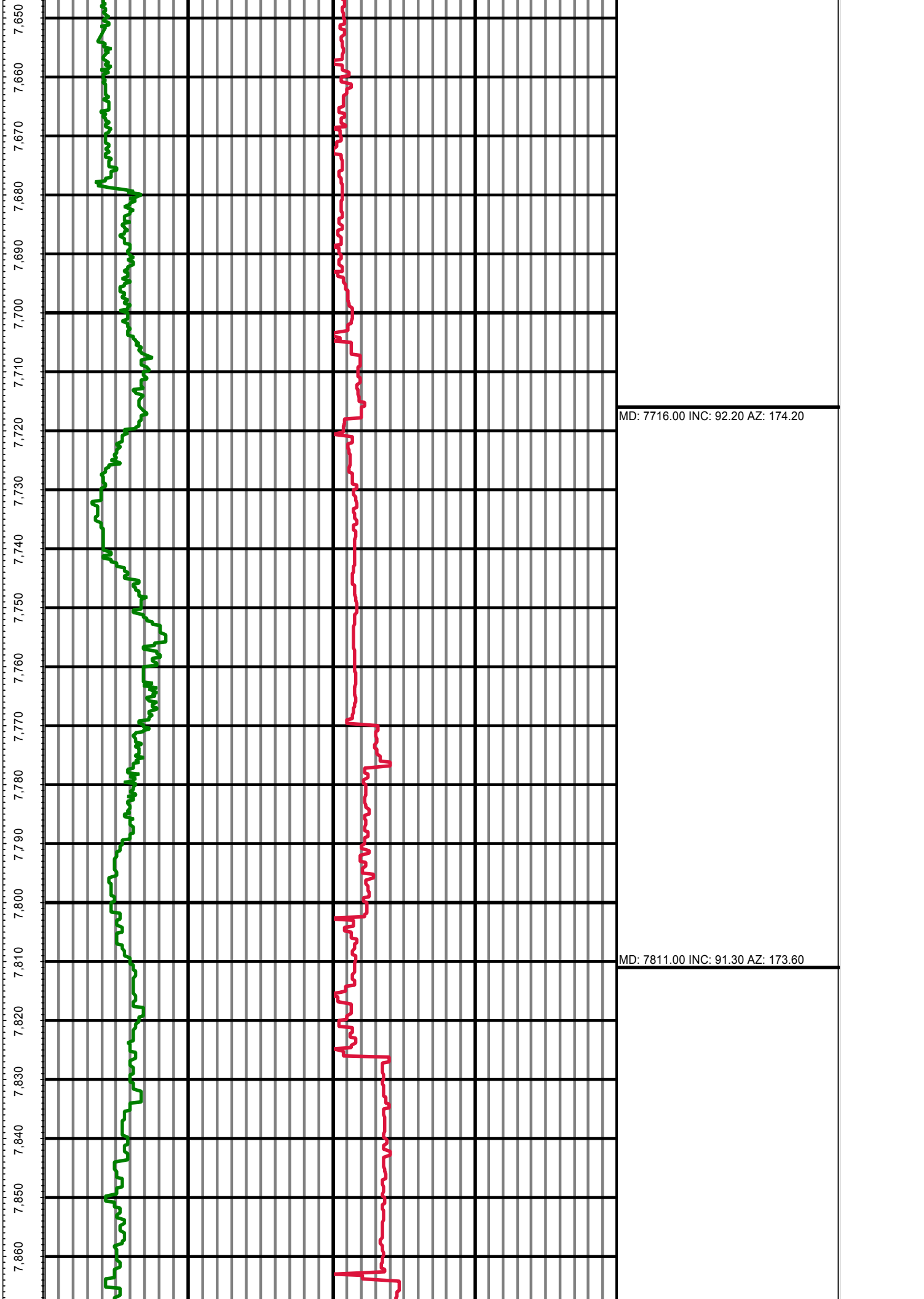


MD: 7225.00 INC: 26.60 AZ: 205.90
MD: 7256.00 INC: 28.60 AZ: 201.00
MD: 7288.00 INC: 32.80 AZ: 195.40
MD: 7319.00 INC: 37.80 AZ: 191.00
MD: 7351.00 INC: 41.70 AZ: 191.00
MD: 7382.00 INC: 44.50 AZ: 190.60
MD: 7414.00 INC: 49.50 AZ: 188.20

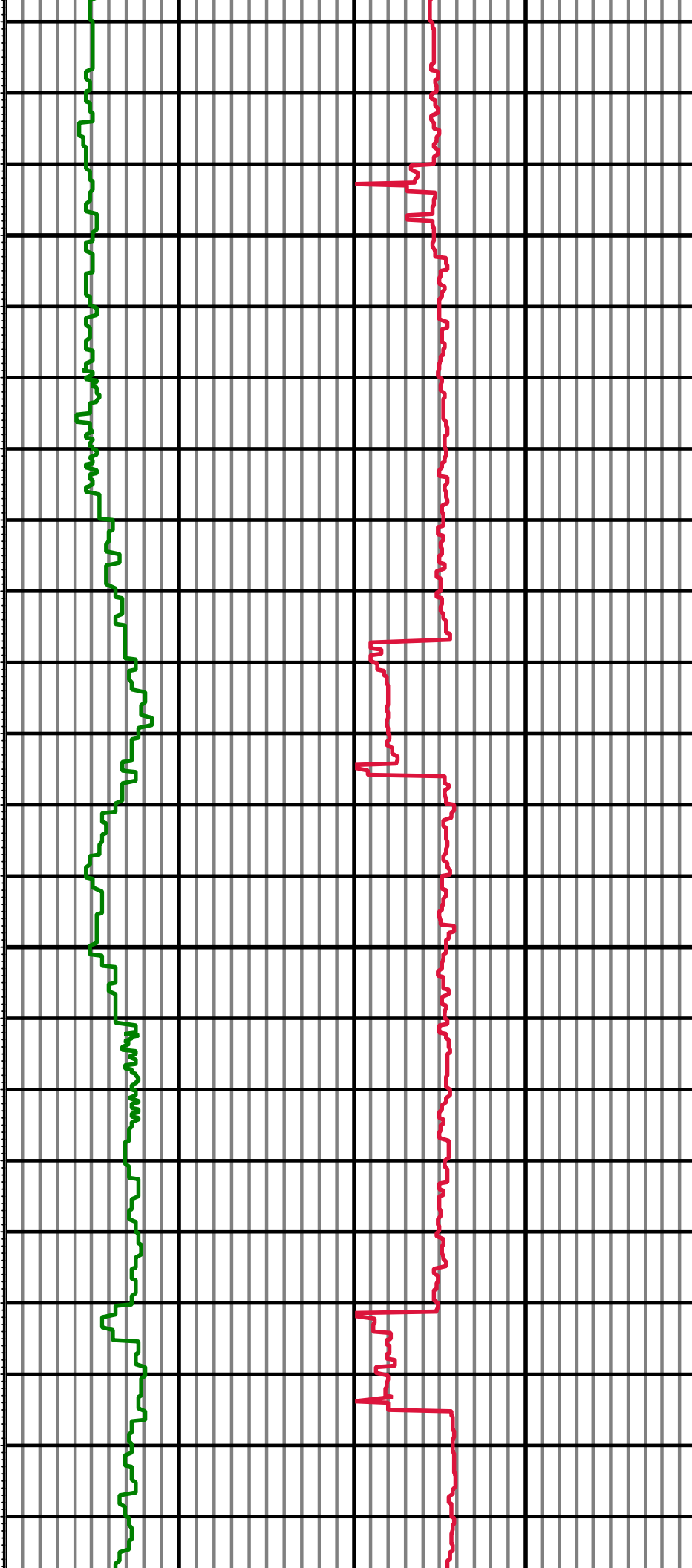
7,430 7,440 7,450 7,460 7,470 7,480 7,490 7,500 7,510 7,520 7,530 7,540 7,550 7,560 7,570 7,580 7,590 7,600 7,610 7,620 7,630 7,640



MD: 7446.00 INC: 55.40 AZ: 186.00
MD: 7477.00 INC: 60.80 AZ: 183.30
MD: 7509.00 INC: 64.80 AZ: 178.60
MD: 7540.00 INC: 69.20 AZ: 174.10
MD: 7572.00 INC: 74.70 AZ: 171.50
MD: 7603.00 INC: 80.00 AZ: 171.30
MD: 7635.00 INC: 85.80 AZ: 172.20



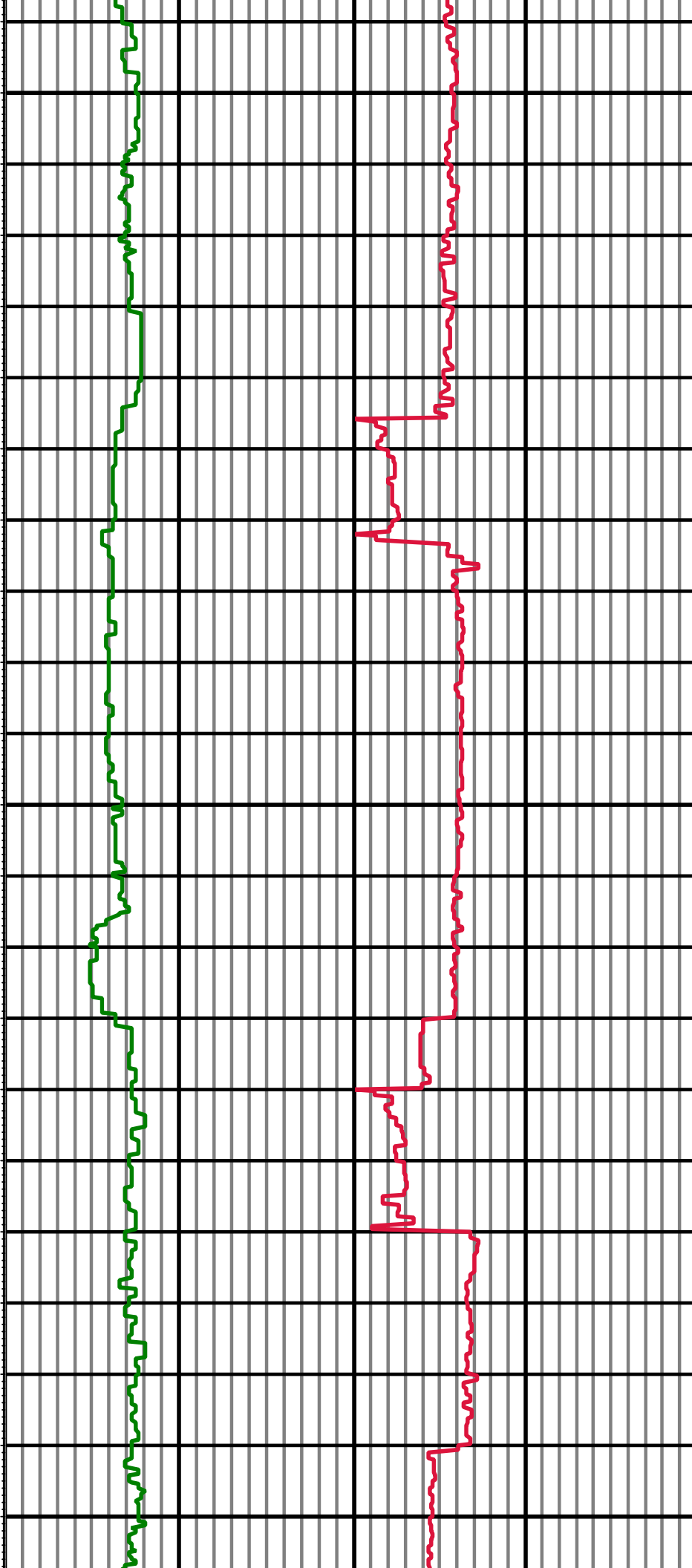
8,080 8,070 8,060 8,050 8,040 8,030 8,020 8,010 8,000 7,990 7,980 7,970 7,960 7,950 7,940 7,930 7,920 7,910 7,900 7,890 7,880 7,870



MD: 7905.00 INC: 89.70 AZ: 174.00

MD: 8000.00 INC: 91.90 AZ: 175.80

8,090 8,100 8,110 8,120 8,130 8,140 8,150 8,160 8,170 8,180 8,190 8,200 8,210 8,220 8,230 8,240 8,250 8,260 8,270 8,280 8,290 8,300

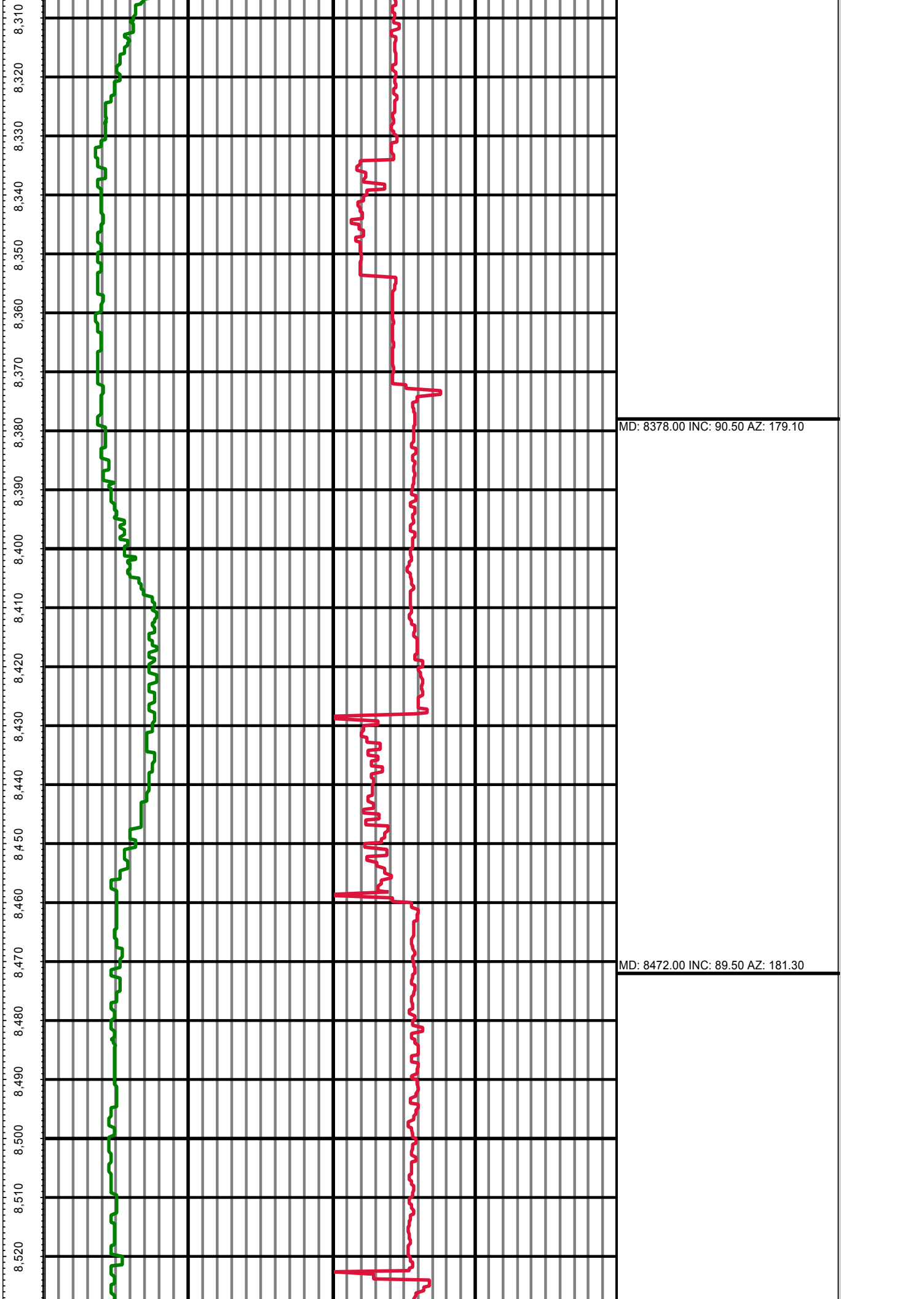


MD: 8094.00 INC: 92.00 AZ: 177.20

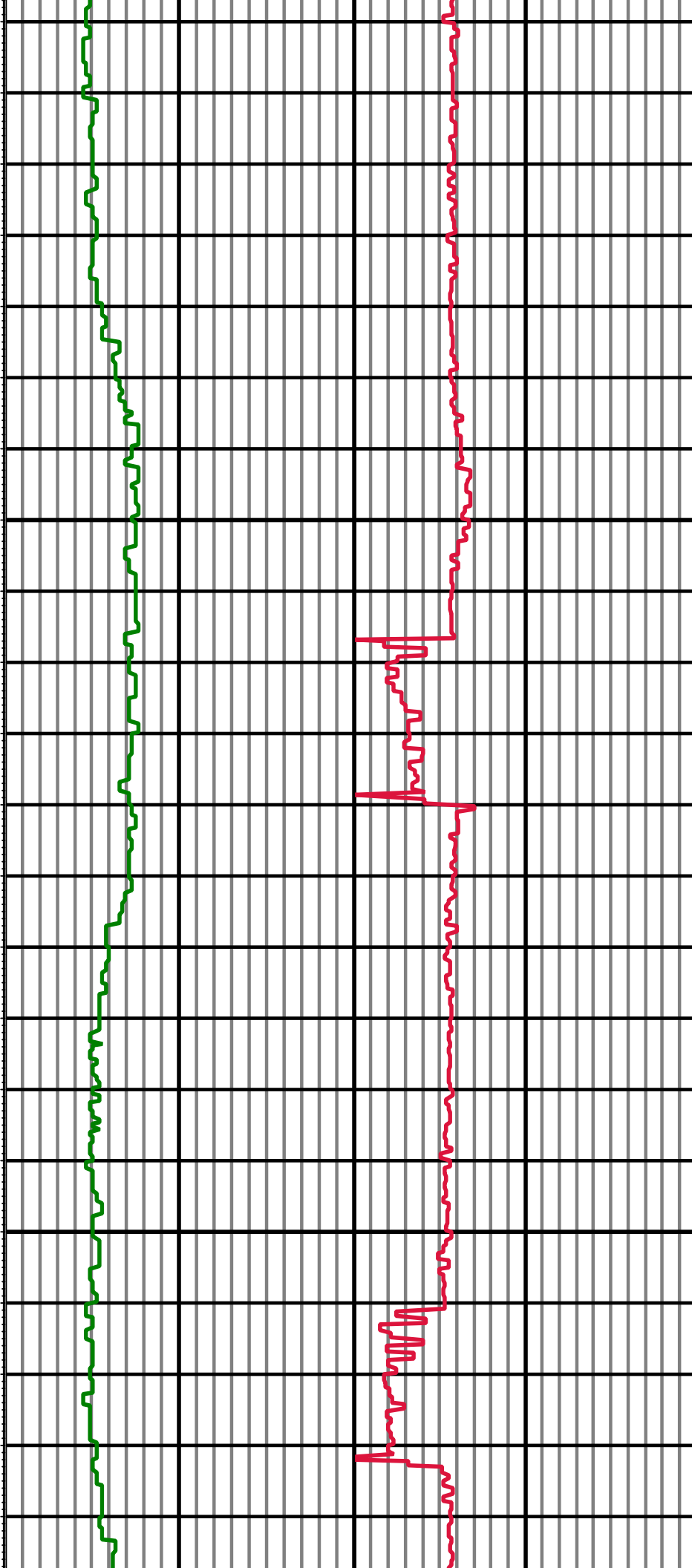
MD: 8189.00 INC: 91.90 AZ: 178.70

MD: 8283.00 INC: 90.60 AZ: 178.90





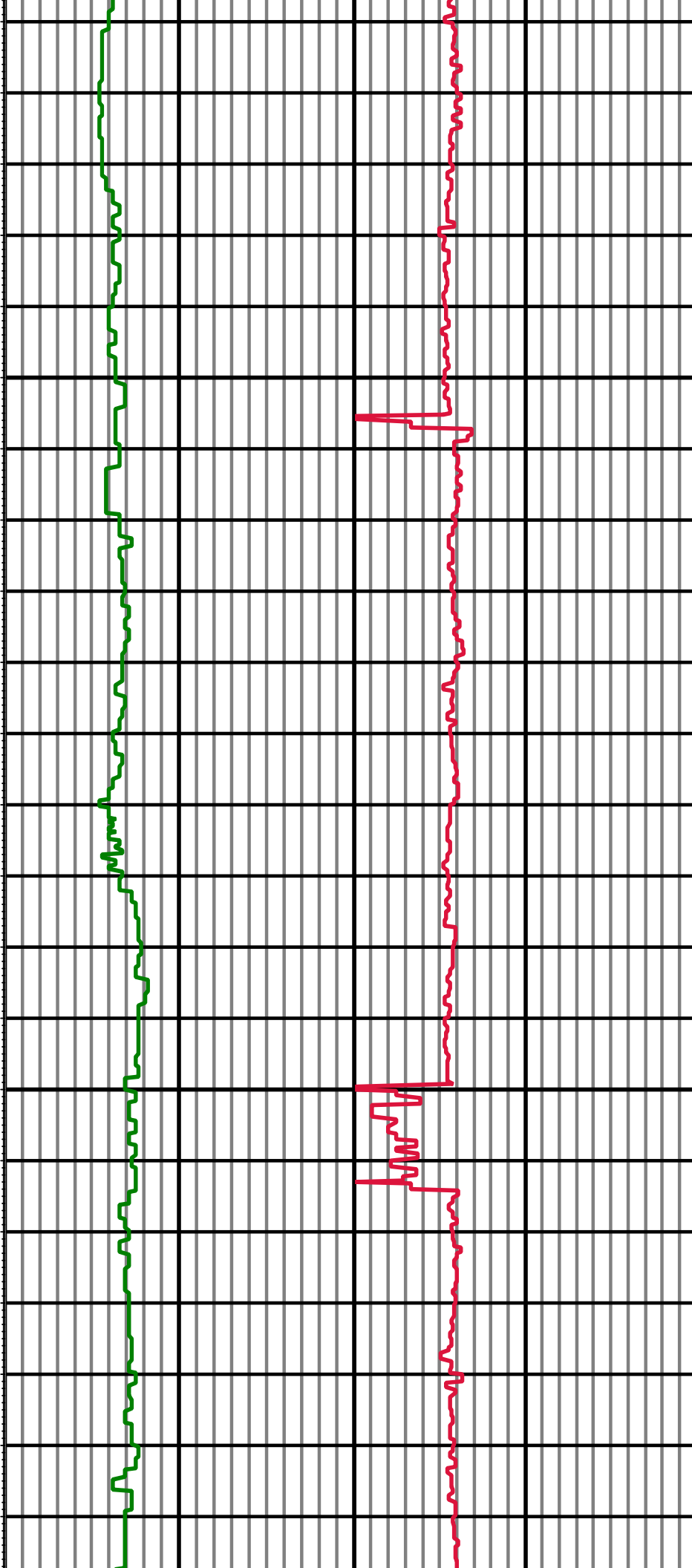
8,740 8,730 8,720 8,710 8,700 8,690 8,680 8,670 8,660 8,650 8,640 8,630 8,620 8,610 8,600 8,590 8,580 8,570 8,560 8,550 8,540 8,530



MD: 8567.00 INC: 90.50 AZ: 181.10

MD: 8662.00 INC: 89.30 AZ: 181.90

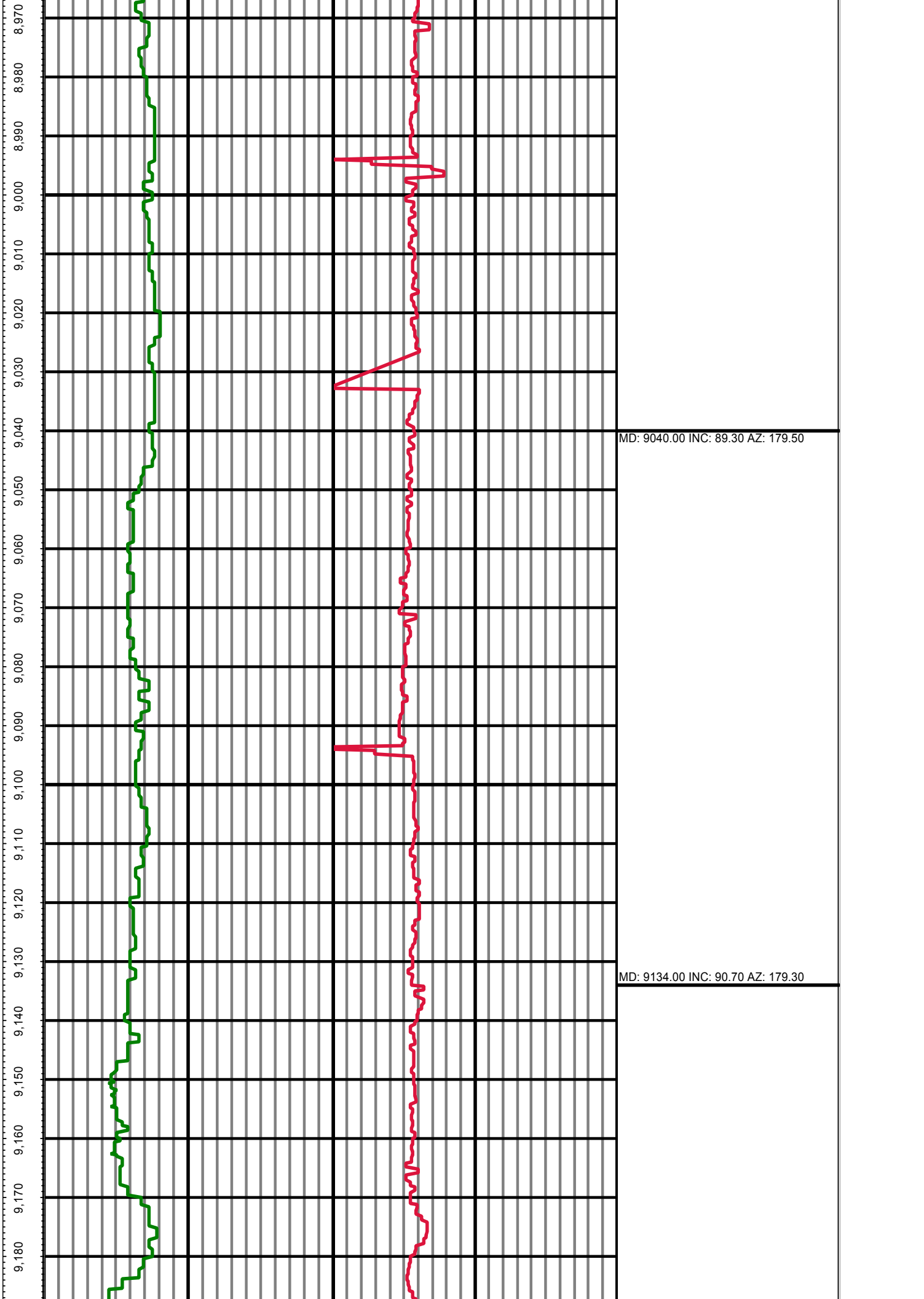
8,960 8,950 8,940 8,930 8,920 8,910 8,900 8,890 8,880 8,870 8,860 8,850 8,840 8,830 8,820 8,810 8,800 8,790 8,780 8,770 8,760 8,750



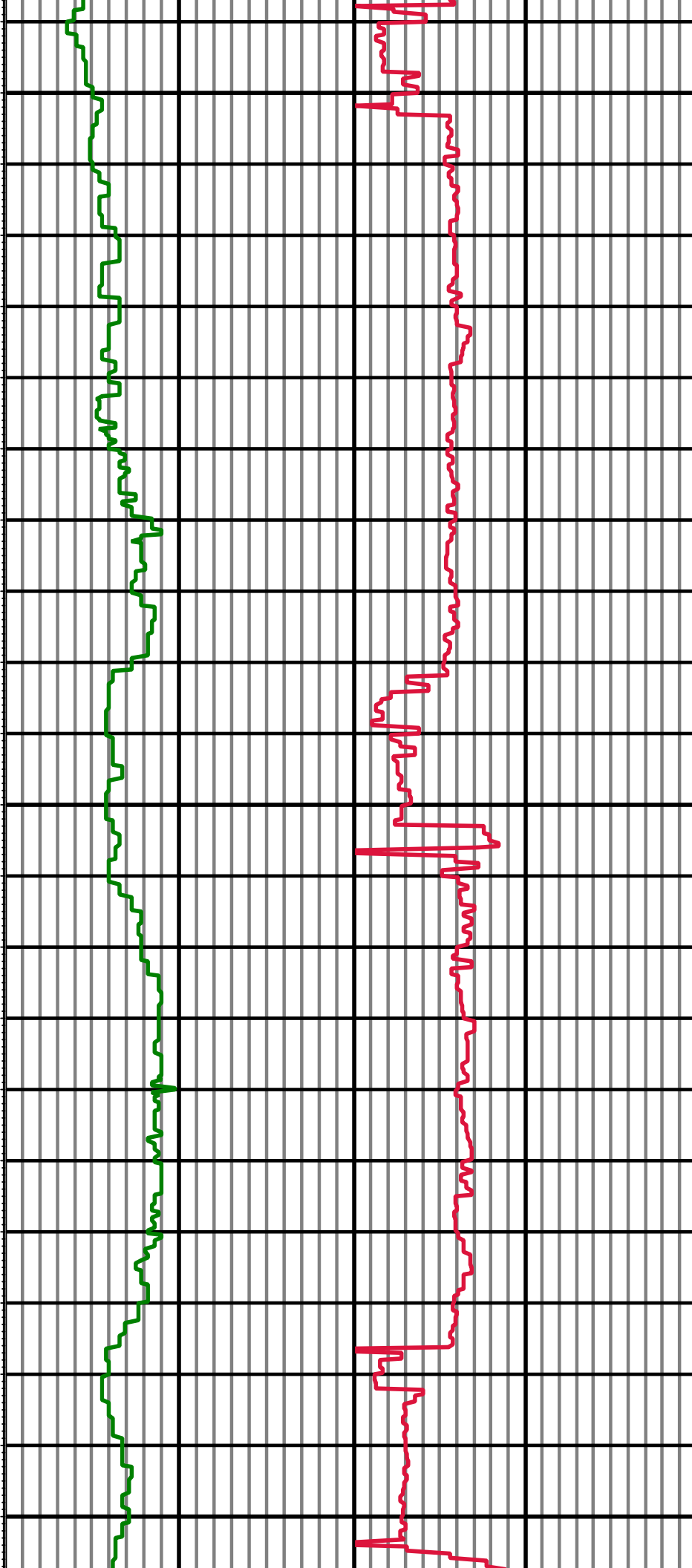
MD: 8757.00 INC: 88.10 AZ: 180.10

MD: 8851.00 INC: 89.00 AZ: 180.20

MD: 8945.00 INC: 88.40 AZ: 179.30



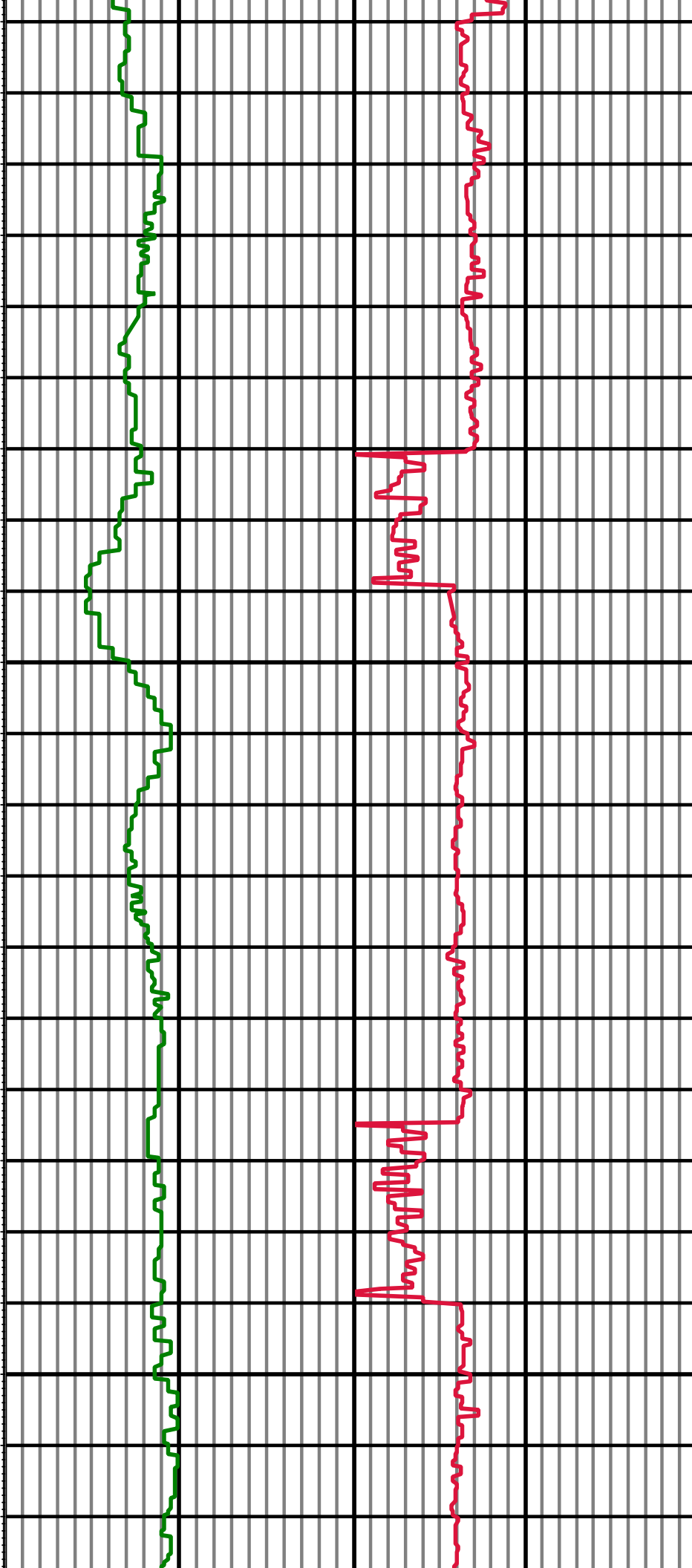
9,400 9,390 9,380 9,370 9,360 9,350 9,340 9,330 9,320 9,310 9,300 9,290 9,280 9,270 9,260 9,250 9,240 9,230 9,220 9,210 9,200 9,190



MD: 9229.00 INC: 91.20 AZ: 179.70

MD: 9323.00 INC: 91.20 AZ: 179.30

9,410 9,420 9,430 9,440 9,450 9,460 9,470 9,480 9,490 9,500 9,510 9,520 9,530 9,540 9,550 9,560 9,570 9,580 9,590 9,600 9,610 9,620

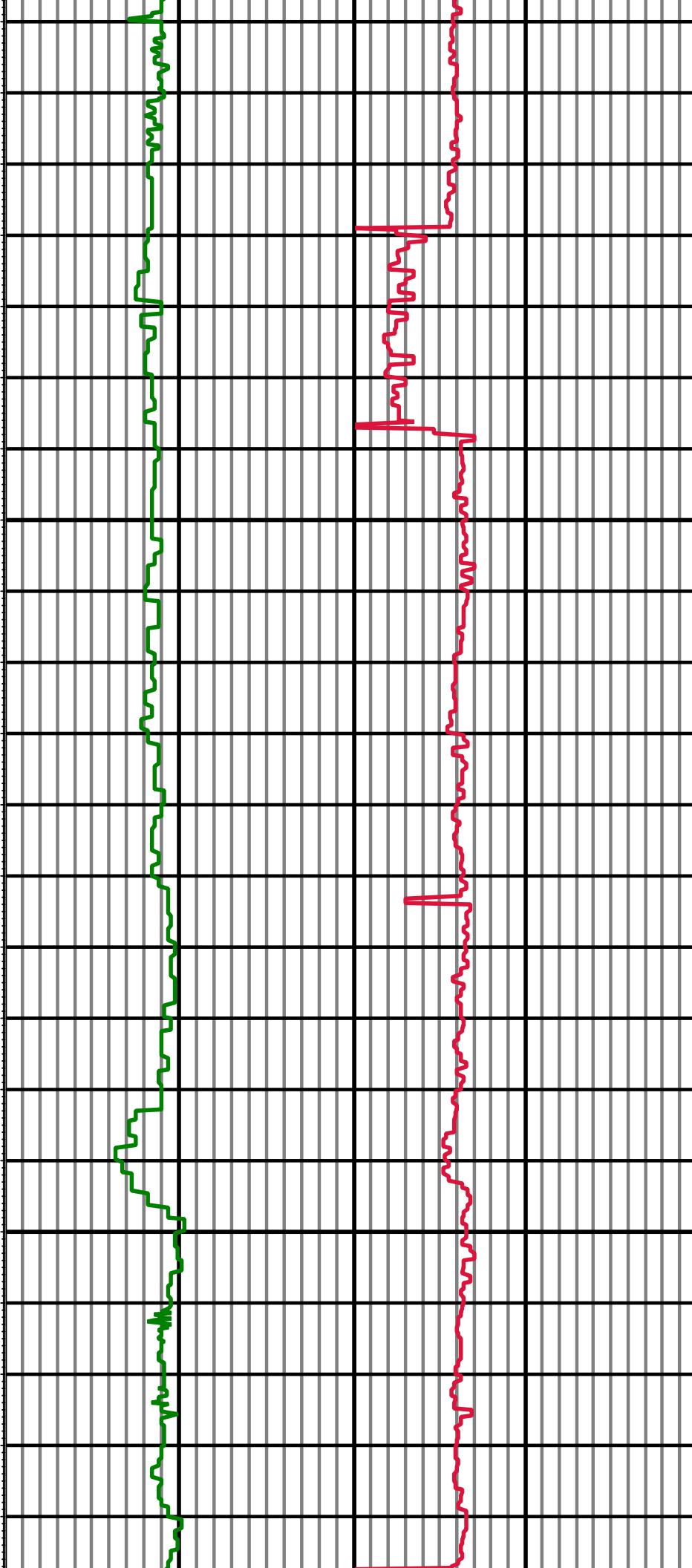


MD: 9418.00 INC: 90.20 AZ: 180.50

MD: 9513.00 INC: 90.60 AZ: 180.10

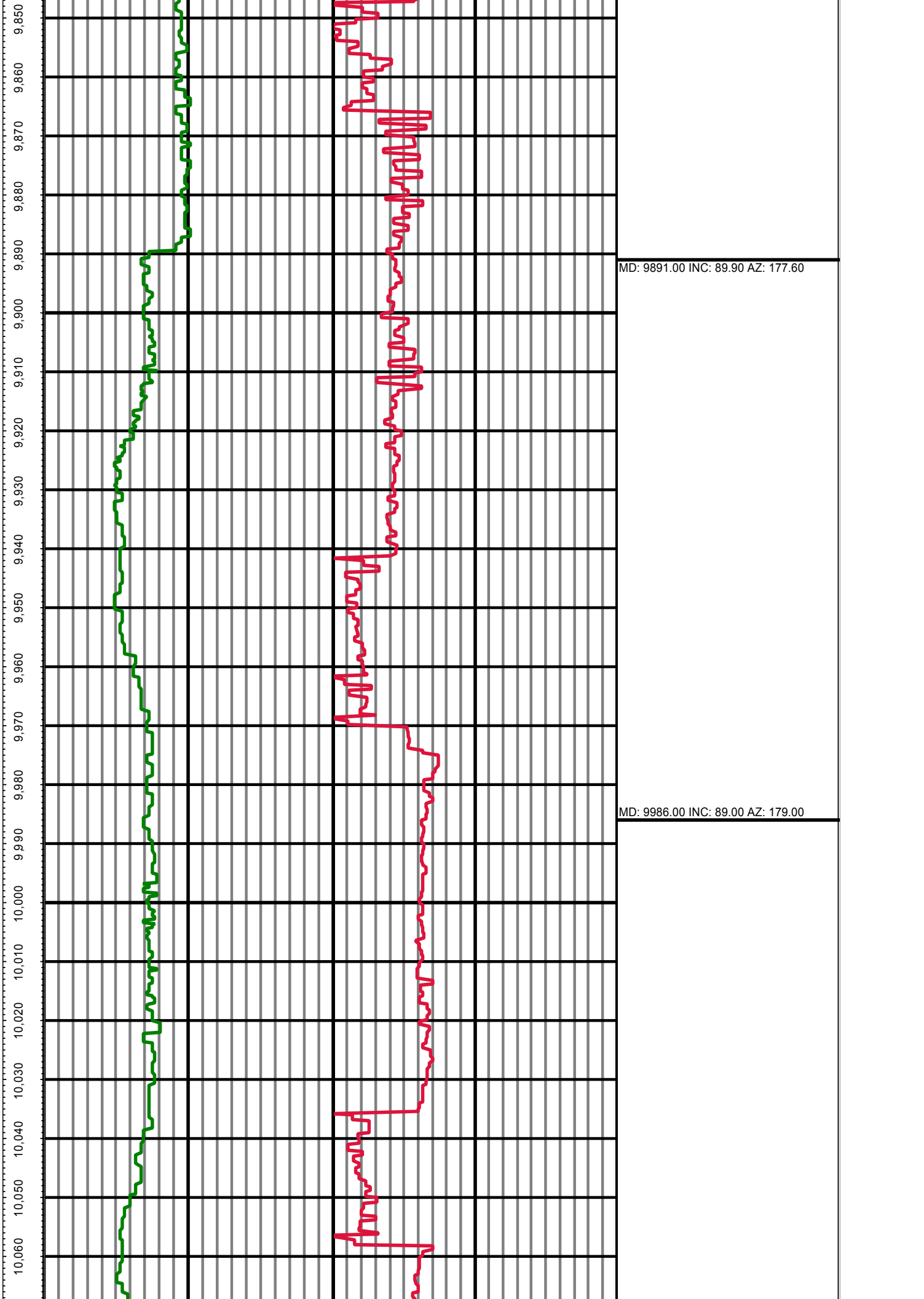
MD: 9607.00 INC: 90.40 AZ: 179.40

9,840 9,830 9,820 9,810 9,800 9,790 9,780 9,770 9,760 9,750 9,740 9,730 9,720 9,710 9,700 9,690 9,680 9,670 9,660 9,650 9,640 9,630



MD: 9702.00 INC: 88.70 AZ: 179.00

MD: 9796.00 INC: 89.70 AZ: 178.40

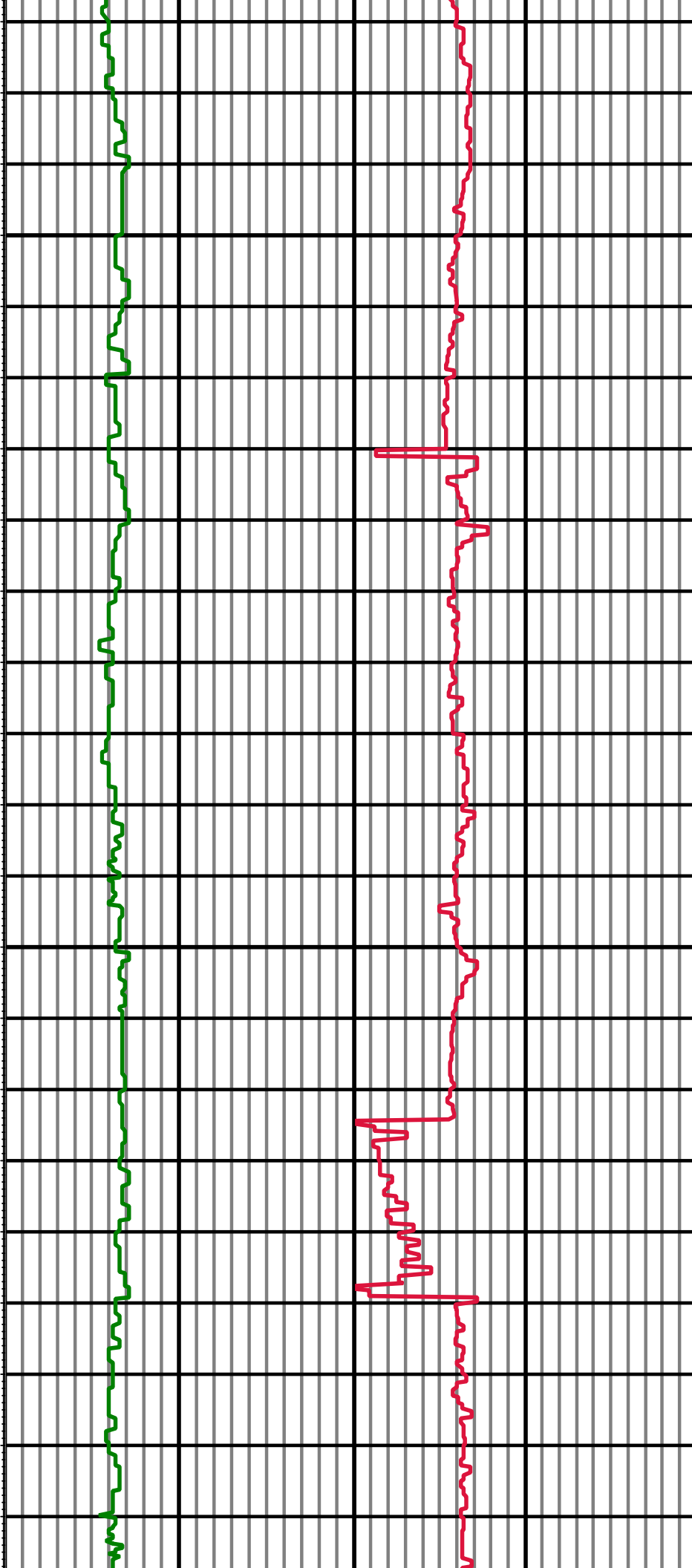


MD: 9891.00 INC: 89.90 AZ: 177.60

MD: 9986.00 INC: 89.00 AZ: 179.00



10,280 10,270 10,260 10,250 10,240 10,230 10,220 10,210 10,200 10,190 10,180 10,170 10,160 10,150 10,140 10,130 10,120 10,110 10,100 10,090 10,080 10,070

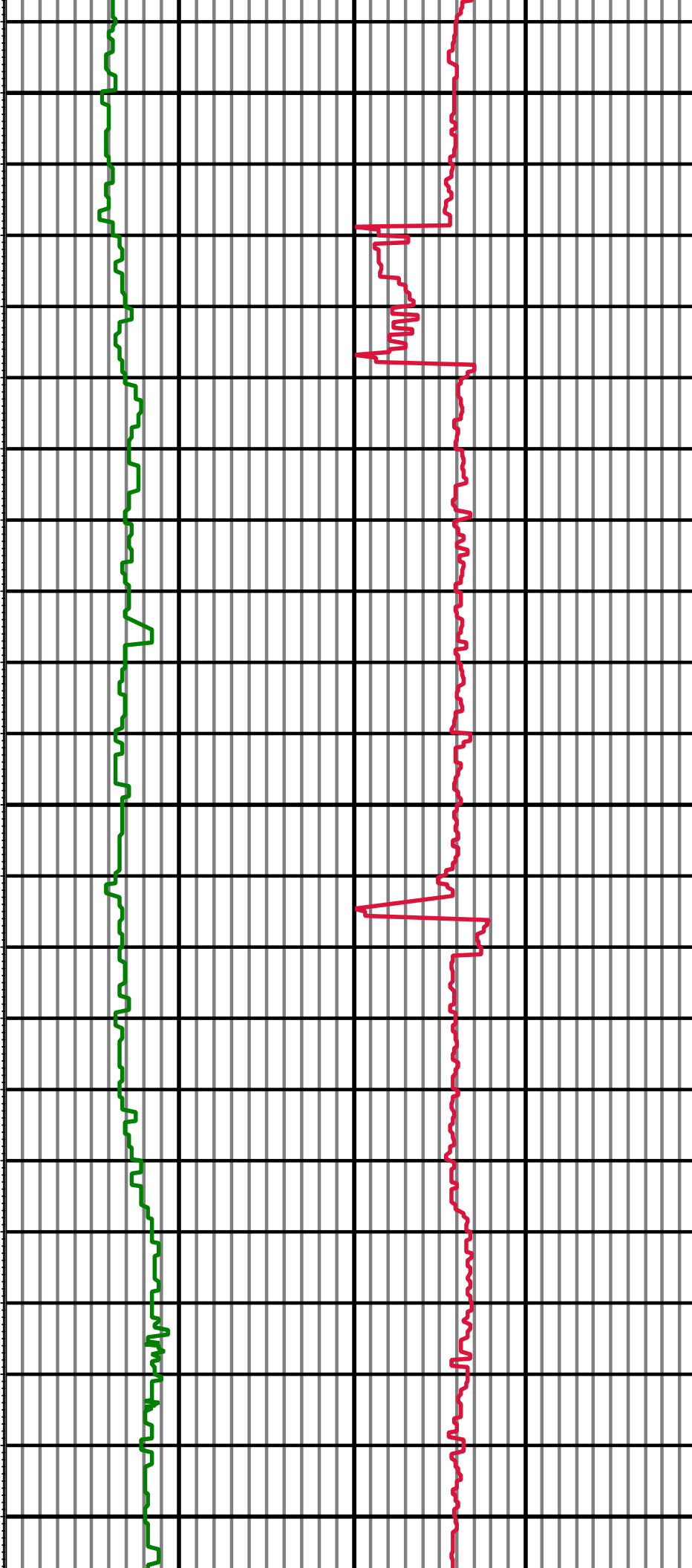


MD: 10080.00 INC: 89.50 AZ: 181.60

MD: 10175.00 INC: 90.20 AZ: 180.70

MD: 10269.00 INC: 89.30 AZ: 182.00

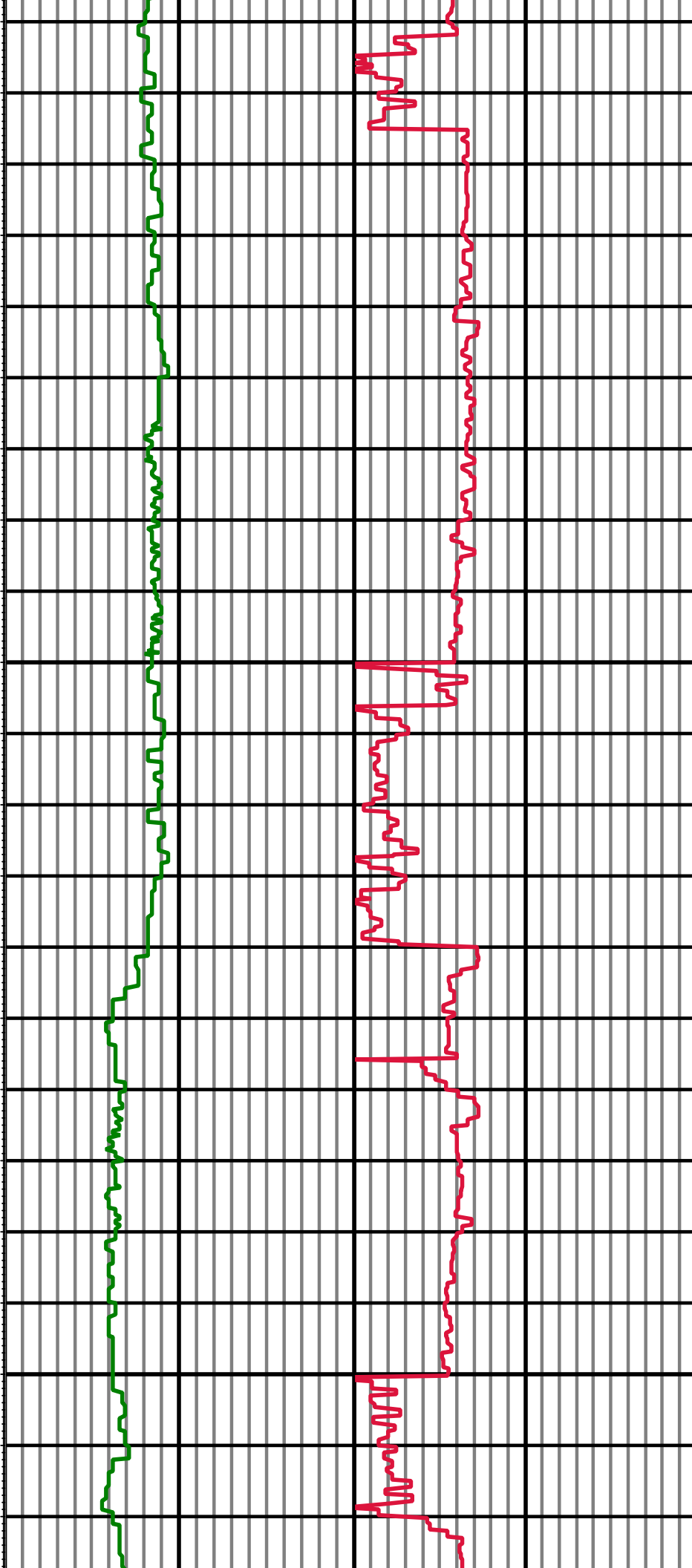
10,500 10,490 10,480 10,470 10,460 10,450 10,440 10,430 10,420 10,410 10,400 10,390 10,380 10,370 10,360 10,350 10,340 10,330 10,320 10,310 10,300 10,290



MD: 10364.00 INC: 88.60 AZ: 183.10

MD: 10459.00 INC: 89.50 AZ: 182.60

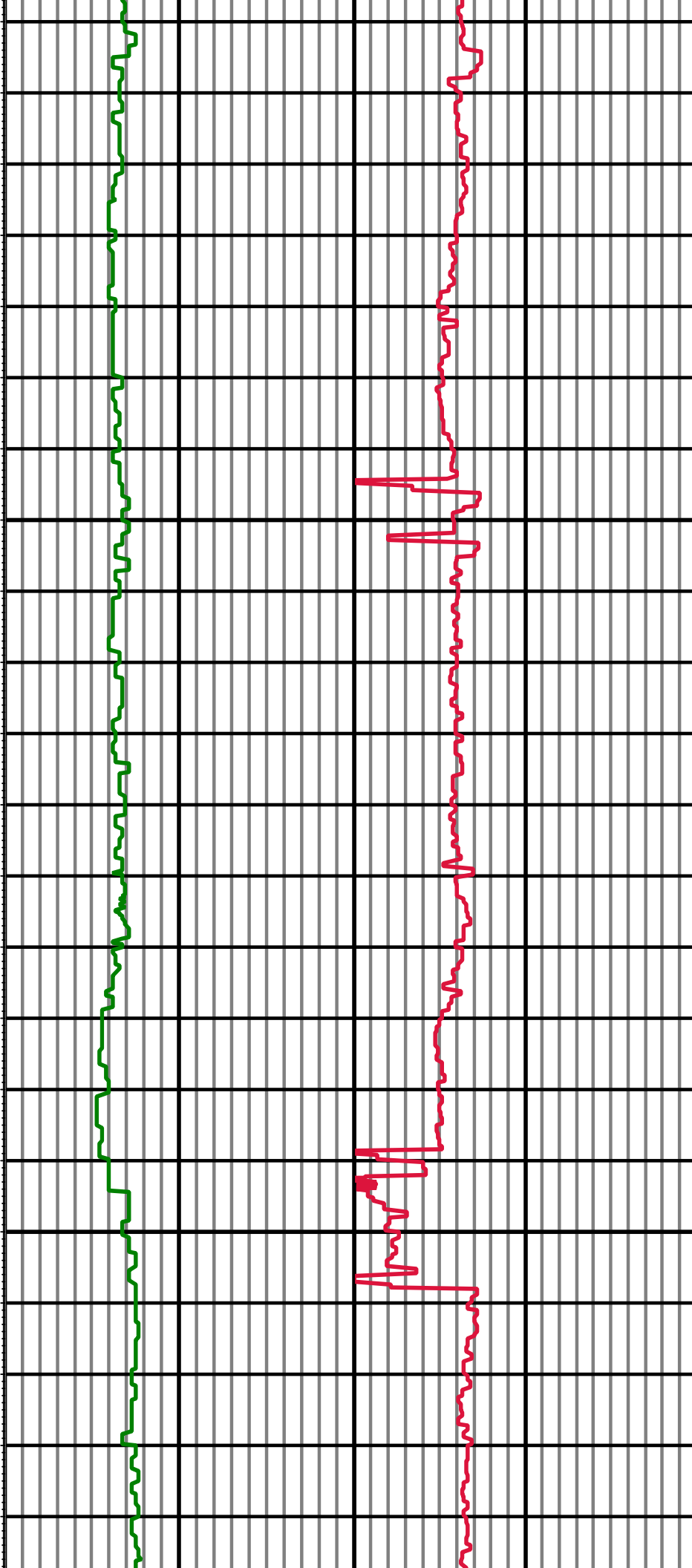
10,720 10,710 10,700 10,690 10,680 10,670 10,660 10,650 10,640 10,630 10,620 10,610 10,600 10,590 10,580 10,570 10,560 10,550 10,540 10,530 10,520 10,510



MD: 10553.00 INC: 90.00 AZ: 182.20

MD: 10648.00 INC: 88.20 AZ: 181.30

10,940 10,930 10,920 10,910 10,900 10,890 10,880 10,870 10,860 10,850 10,840 10,830 10,820 10,810 10,800 10,790 10,780 10,770 10,760 10,750 10,740 10,730

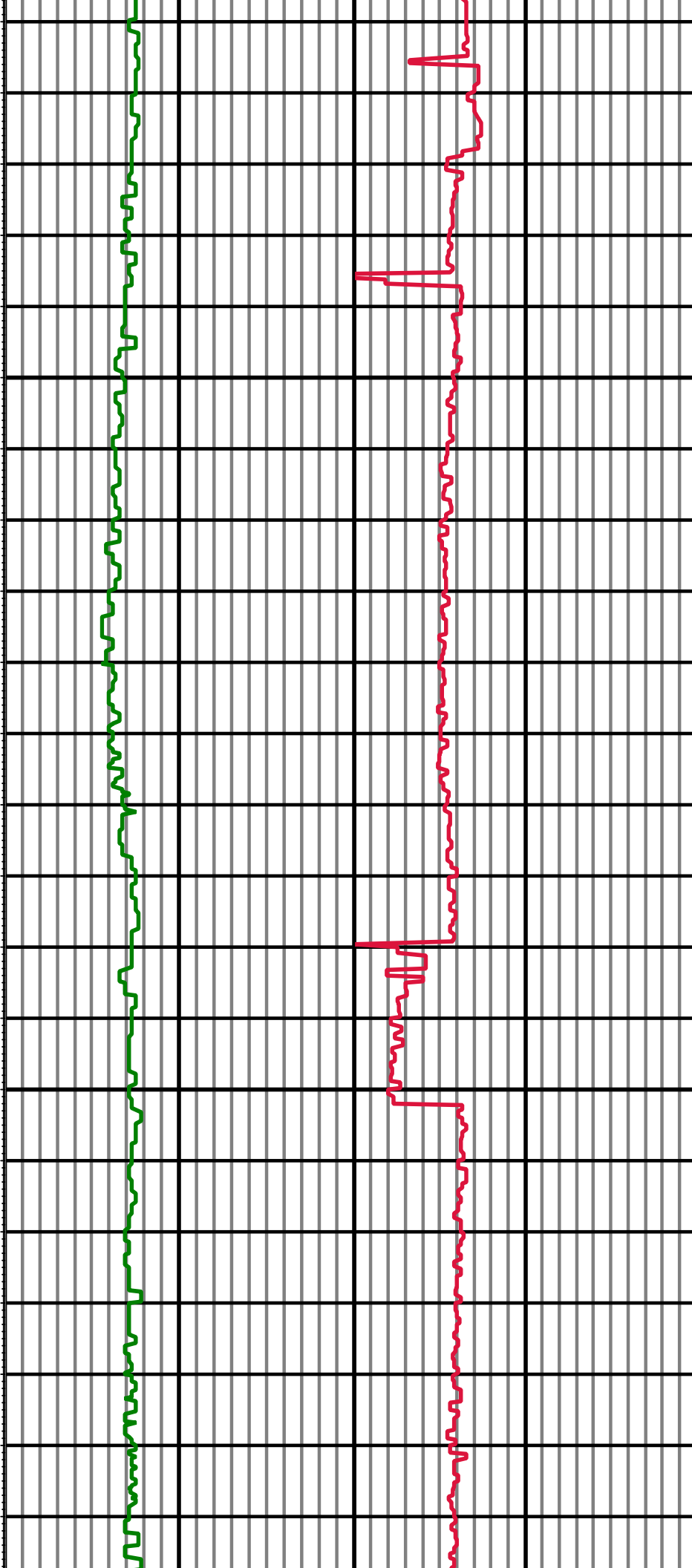


MD: 10742.00 INC: 88.50 AZ: 179.70

MD: 10837.00 INC: 88.90 AZ: 180.00

MD: 10931.00 INC: 90.40 AZ: 179.10

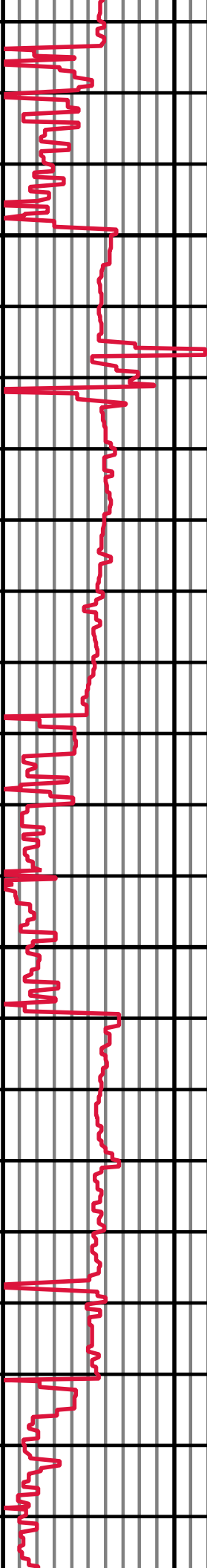
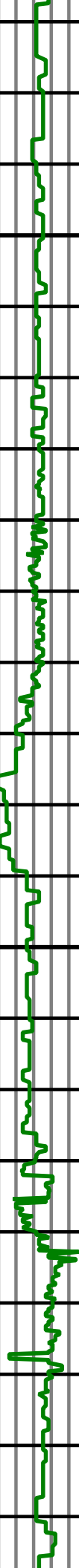
11,160 11,150 11,140 11,130 11,120 11,110 11,100 11,090 11,080 11,070 11,060 11,050 11,040 11,030 11,020 11,010 11,000 10,990 10,980 10,970 10,960 10,950



MD: 11026.00 INC: 90.20 AZ: 178.10

MD: 11121.00 INC: 89.90 AZ: 177.80

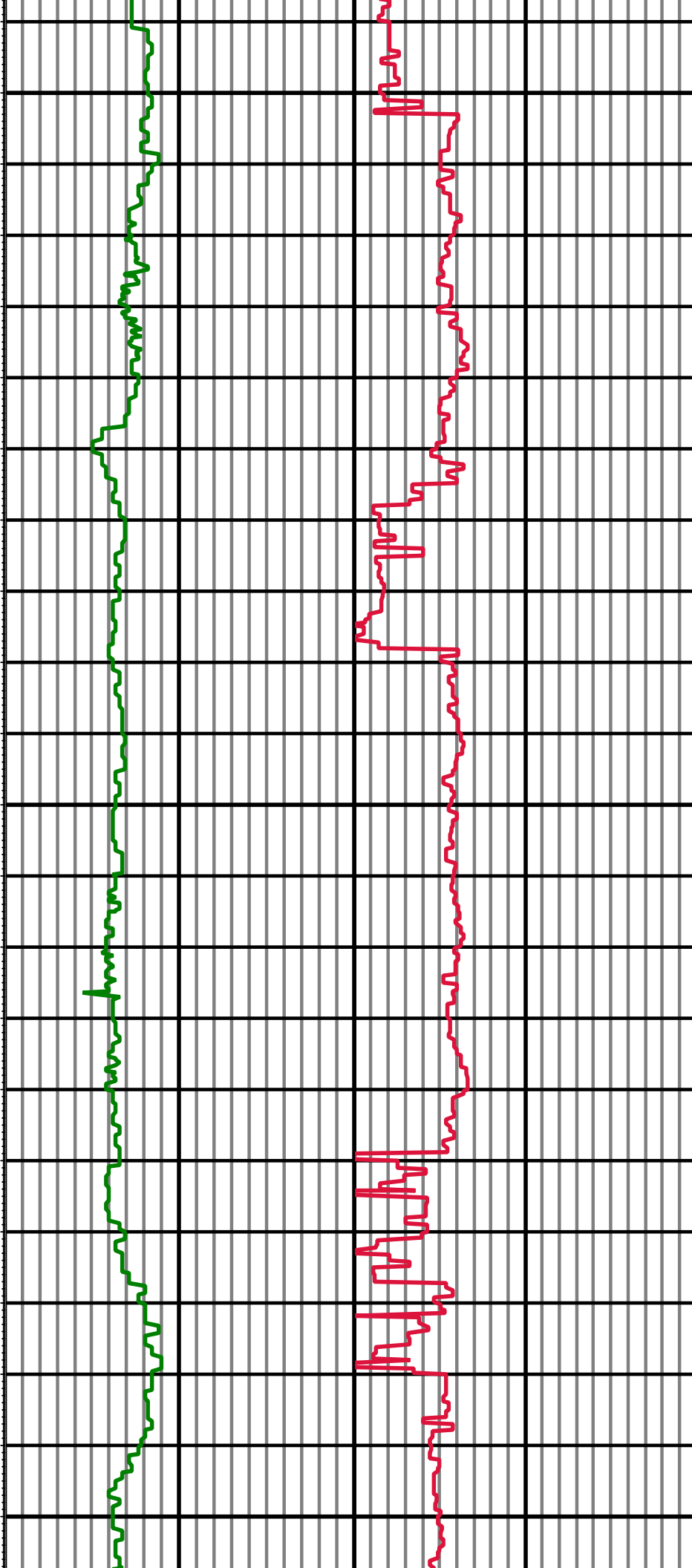
11,380 11,370 11,360 11,350 11,340 11,330 11,320 11,310 11,300 11,290 11,280 11,270 11,260 11,250 11,240 11,230 11,220 11,210 11,200 11,190 11,180 11,170



MD: 11215.00 INC: 88.70 AZ: 177.80

MD: 11310.00 INC: 90.90 AZ: 177.60

11,390 11,400 11,410 11,420 11,430 11,440 11,450 11,460 11,470 11,480 11,490 11,500 11,510 11,520 11,530 11,540 11,550 11,560 11,570 11,580 11,590 11,600

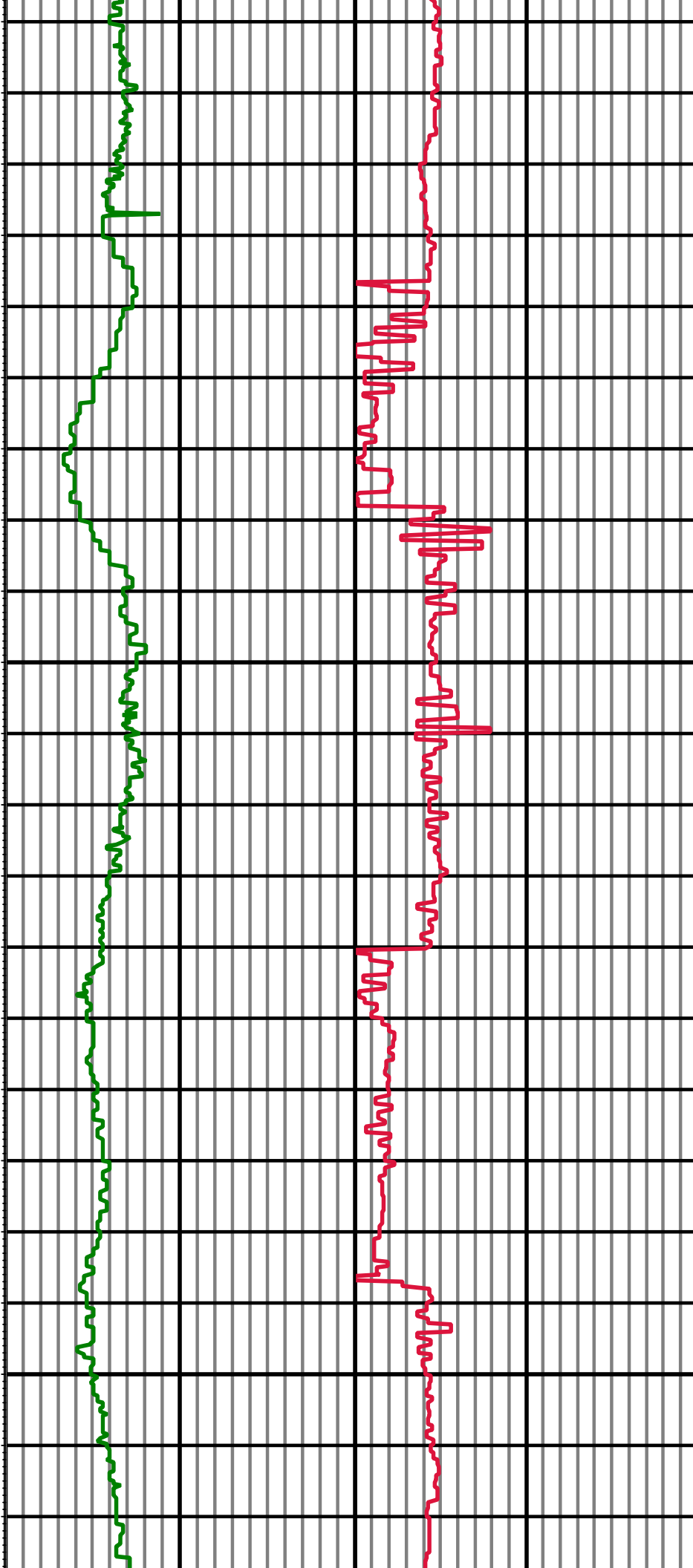


MD: 11404.00 INC: 93.20 AZ: 178.40

MD: 11499.00 INC: 93.30 AZ: 179.60

MD: 11593.00 INC: 93.10 AZ: 177.60

11,820 11,810 11,800 11,790 11,780 11,770 11,760 11,750 11,740 11,730 11,720 11,710 11,700 11,690 11,680 11,670 11,660 11,650 11,640 11,630 11,620 11,610



MD: 11688.00 INC: 93.10 AZ: 178.30

MD: 11783.00 INC: 89.00 AZ: 179.60



